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Research and Development

EPA

Oil Spill Debris

Where to Put the Waste

Interagency Energy/Environment R&D Program Report

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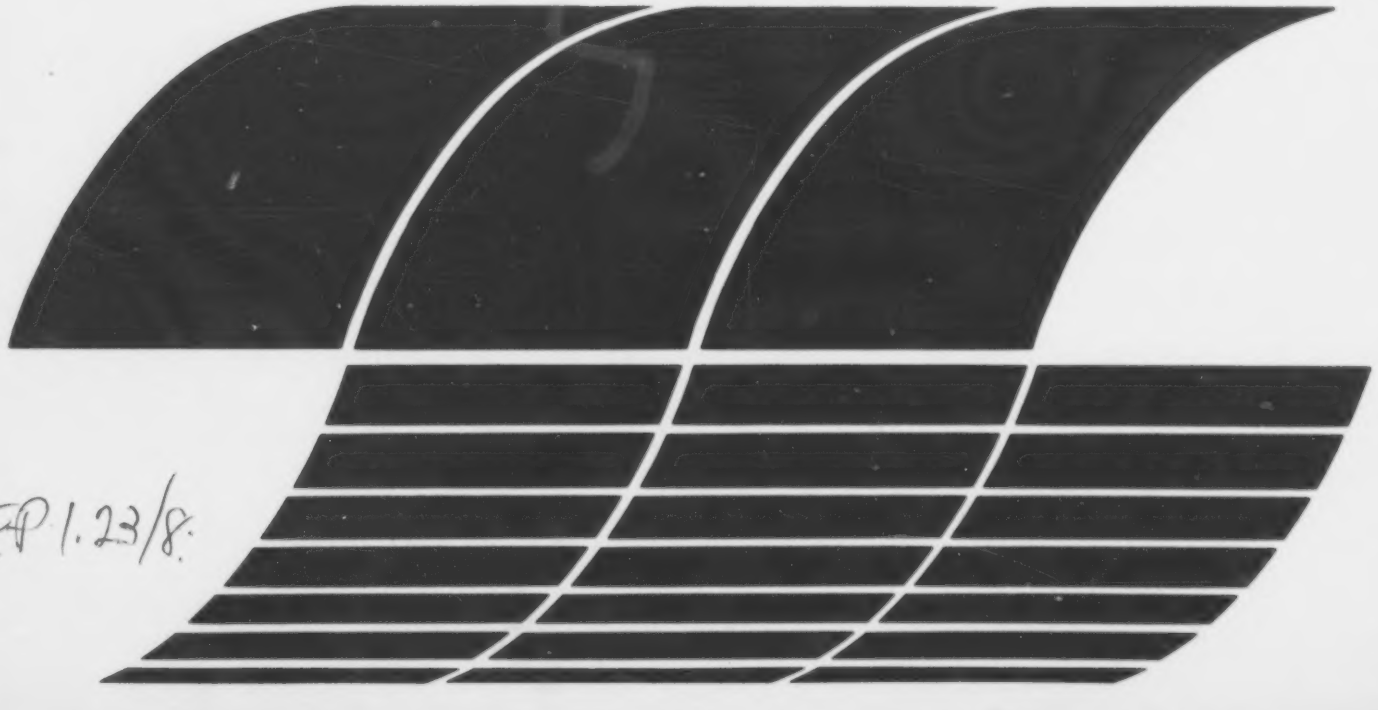

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EPA-600/7-80-016
January 1980

OIL SPILL DEBRIS: WHERE TO PUT THE WASTE

A Digest of a Workshop On
Oil Spill Debris Disposal
held at Boston, MA
February 22, 1978

Co-sponsored by the Oil and Hazardous Materials Spills Branch
U.S. Environmental Protection Agency
and the New England River Basins Commission

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FOREWORD

When energy and material resources are extracted, processed, converted, and used, the related pollutional impacts on our environment and even on our health often require that new and increasingly more efficient pollution control methods be used. The Industrial Environmental Research Laboratory - Cincinnati (IERL-Ci) assists in developing and demonstrating new and improved methodologies that will meet these needs both efficiently and economically.

This is a report of a workshop where the difficult problem of disposing of oil spill debris was considered by a group of Federal, State, and local officials and private concerns in the northeastern United States. This report will be of interest to all those interested in cleaning up oil spills in inland and coastal waters. Further information may be obtained through the Resource Extraction and Handling Division, Oil and Hazardous Materials Spills Branch, Edison, New Jersey.

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PREFACE

The many recent groundings or sinkings of coastal barges and tankers and the ensuing oil spills along the Northeast coast have focused a good deal of attention on spill cleanup.

The New England/New York Coastal Zone Task Force, whose members come from the coastal zone management offices of the five New England coastal states and the state of New York established an Oil Spill Contingency Planning Subcommittee to examine what might be done on a regional basis to respond to oil spills.

The Subcommittee's chief finding was that state and local officials responsible for oil spill cleanup needed more accurate information about cleanup and disposal methods. To fill that need, the task force requested its Regional OCS Technical Service to develop a strategy for acquiring and disseminating such information. EPA's Industrial Environmental Research Laboratory, Edison, New Jersey, was asked to conduct workshops on oil spill debris disposal options for state and local officials and environmental agencies. EPA agreed, and the first workshop was convened February 22, 1978, in Boston, Massachusetts.

The workshop brought together representatives of state and federal agencies, commercial clean-up contractors, the oil industry, and state and municipal officials to exchange views about oil spill debris disposal problem and to seek practical solutions.

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ABSTRACT

This report is a digest of a workshop, held February 22, 1978, in Boston, Massachusetts, on disposal of oil spill debris. The workshop was co-sponsored by EPA and the New England/New York Coastal Zone Task Force, organized under the New England River Basins Commission.

Representatives of five New England states and New York agreed that oil spill cleanup and disposal of debris is a major regional problem which must be addressed by identifying disposal sites in advance of major oil spills.

The workshop provided a forum for discussion of state oil spill clean up and disposal and EPA's policies and plans for regulating clean-up operations.

A representative from each of the six states reviewed existing laws and regulations governing oil-debris stockpiling, transportation to disposal sites, and the relation between state and local ordinances on liability for disposal costs. Ultimate responsibility for oily debris transportation and disposal varies from state-to-state, and this in turn affects approaches to identifying acceptable disposal sites.

In the past, clean-up contractors sought disposal sites immediately after a spill; an approach which, according to the state representatives, is not effective. Clean-up contractors who are unfamiliar with the area, often encounter local opposition to oily waste disposal. The states should identify those sites in advance and negotiate for their use as oil debris disposal sites.

EPA representatives pointed out that sound technology for land disposal of oily wastes does exist. John Farlow, of EPA's Industrial Environmental Research Laboratory in Edison, New Jersey, highlighted the recommendations of a recent study by EPA, Oil Spill Decision for Debris Disposal:

1. Reclaim as much oil from the waste as possible.

2. Burn the material, where air pollution standards permit; or

3. Land small particles, such as sand, hay, or small rocks or pebbles; or

4. Deposit other debris in a sanitary landfill or a burial pit. Fine-grained soils, (e.g., clay) hold the oil more effectively

than do coarser sand and gravel. The ground water must be monitored closely.

EPA is preparing regulations for the handling of hazardous materials under the authority of the Resource Conservation and Recovery Act. According to the proposed regulations, the determination of whether oily debris from a spill is considered hazardous is made on the basis of how such debris conforms to certain criteria, such as corrosiveness, flammability, and toxicity, among others. The EPA is scheduled to set standards for hazardous debris treatment, transportation, disposal, storage and site selection.

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SECTION 1

INTRODUCTION

ENVIRONMENTAL PROTECTION AGENCY
William R. Adams, Administrator, Region I

New England probably imports more oil than any other region in the United States. Oil is being brought in by tanks and transferred to land on a continual basis. That amount of activity, together with the always-present probability for human error, makes spills -- despite technological advances -- inevitable.

These spills have been happening with a frequency and a severity that demand attention. In the past few weeks alone, serious spills have occurred in Portland Harbor, in Maine; in Portsmouth, New Hampshire; in Salem Harbor in Massachusetts; and in Mount Hope Bay in Rhode island. (Another spill occurred in Long Island Sound between Connecticut and New York.)

The Coast Guard and the Environmental Protection Agency are responsible for cleaning up a spill, under authority of the Clean Water Act. Their experience has shown that the most difficult aspect of clean up is where to put the oily waste.

A good example is the Tamano spill in Castle Bay, in Portland, Maine. Debris disposal became an emotional issue, with the media criticizing the effectiveness of state and federal efforts. In fact, the Coast Guard, the state, and the Texaco Company were all seeking a suitable disposal site. One was found, with the owner and town manager in favor of its use for disposal. But as soon as the townspeople heard about it, they opposed the proposal and the town manager reversed his position. Eventually, the material was burned. Even after that, there had been some concern that the material had been the cause of the contamination of groundwater supplies in Gray, Maine. It was later confirmed that the source of contamination was not the Tamano wastes.

All of this demonstrates what a difficult and complex problem oily waste disposal is. This workshop provides the opportunity to hear what other states have done, what has worked and what not, and what the roles of the different levels of government and the private sector should be.

SECTION 2

SUMMARIES OF STATE APPROACHES TO OIL SPILL DEBRIS DISPOSAL

MAINE

Marc Guerin
Director, Division of Oil Conveyance Services
Department of Environmental Protection

Through the enactment of the Coastal Conveyance Act of 1970, the State has established an agressive program to deal with oil spill cleanup. Maine recognizes that a major problem is the proper designation of suitable disposal sites for unsalvagable oily debris. For the past three years, the State of Maine has been collecting detailed statistics on the oil spill problem. These statistics show that there were over nine hundred spills during the period from almost every area of the state without regard to population or season.

Maine's response efforts have resulted in recovery of 83 percent of all oil spilled. However, not all of this oil is recovered in a reusable form. Most of the non-liquid materials recovered are non-combustibles. Therefore, in the absence of pre-designated stockpile sites, the majority of the material has been placed in existing sanitary landfills that may or may not be suitable to receive such waste. Because of the need to provide for proper disposal of debris from spill cleanup, Maine is now in the process of obtaining proper stockpiling sites and is conducting a feasibility study on locating a permanent site. The money to conduct these studies comes from the license fee applied to each barrel of oil transferred from a marine vessel to a shoreside terminal in Maine. This has created a fund that, in 1977, was allowed to increase by the Legislature to $6 million. Of this money, the Department of Environmental Protection is authorized by the legislature to use $100,000 annually for research into the causes and effects of oil pollution and to help find solutions to the problems.

The requirements of Maine's site selection law have made the establishment of a private disposal site unattractive financially, so state officials believe they must act to fill the void.

NEW HAMPSHIRE

Thomas L. Sweeney, Chief
Bureau of Solid Waste
Department of Health and Welfare

New Hampshire's biggest problem in disposing of oil debris is finding a proper site. Material from two substantial spills is n[illegible]l disposed of at this point according to Mr. Sweeney. Most of the t[illegible] the Bureau of Solid Waste is not contacted until after a spill has occurred, and is then asked to provide a site for disposal. Because of the variable characteristics of the debris and because sites are not pre-designated for classes of materials, the Bureau has a difficult task in trying to find a suitable site on short notice. At present, there are no state designated disposal sites, and each oil spill is handled on a case-by-case basis.

The state does not have the authority to approve a disposal site for oily debris, nor does it have the fund or staff to identify these sites. It is the responsibility of the clean-up contractor to find a site when the spill occurs. Then he must ask the state for approval. Because the state usually has no alternative sites to choose from, it is difficult to refuse the contractor's site in the crisis atmosphere surrounding the spill. Recently, the state has been making an effort to identify, at least in a general way, sites that may be suitable for oily debris disposal.

It was pointed out that because clean-up contractors come from some distance to work on the spill, they are usually not familiar with the local area, making identification of suitable disposal sites difficult. Most towns want the oil cleaned up from their shorelines and waterways, but they do not want the debris disposed of in their town. They are even less anxious to accept debris from another town.

The current policy in the State of New Hampshire is that the oil spill clean-up contractors are in business to clean up and dispose of debris from oil spills. It is not the state's responsibility to help them run their business by providing and maintaining disposal sites. However, Mr. Sweeney did agree that it would be desirable for the state to get the funds to establish pre-approved sites for disposal, although the state may not actually acquire these sites.

VERMONT

John Malter
Department of Water Resources
Agency of Environmental Conservation

Vermont's policy relative to the disposal of oil saturated debris has been to just collect any free oil for recycling. The remaining debris is then sent to approved sanitary land fills for either mixing with municipal refuse or direct burial in a lined pit. Currently, there are no incinerators in Vermont that have the capability to burn oil saturated debris.

However, Vermont's Air and Solid Waste Division feels that if good mobile incinerators were available (like the one currently being developed by EPA) they could be approval for incineration of oily debris on a case-by-case basis. The use of land farming for the disposal of degradable oil saturated debris is currently being studied by the Water Resources Department for possible widespread application throughout the state.

Stockpiling of oily debris for any extended length of time is discouraged in Vermont. If material has to be stockpiled before disposal, it is usually contained at the ultimate disposal site, not at the spill site. The amount of time that material is kept in a stockpiled condition is kept to a minimum.

Transportation of oily debris from a spill to the disposal site is accomplished by the cleanup contractor under the supervision of the Department of Water Resources. If the oily debris is classified as a hazardous waste by the Environmental Protection Agency, it would be included in the State's Hazardous Waste Manifest System which is in the process of being developed.

The disposal of oil saturated debris is considered to be one of the costs of an oil spill cleanup and is charged to the polluting party. The charge is billed by the disposal site operator to include both the ultimate disposal and the monitoring cost for this debris. After the debris has been disposed of at the site, it becomes the responsibility of the operator of the site to maintain whatever monitoring is deemed necessary by the state.

All sanitary landfills within Vermont must be certified by the Secretary of the Agency of Environmental Conservation. This certification (which takes about six (6) months to complete) includes the following information: the location of the site; proper operation and development of the site in accordance with engineering plans that have been approved by their permit; the projected amount and types of waste materials; and the type and number of suitable pieces of equipment that will operate the landfill properly. The operator must also develop ground and surface water monitoring throughout the life of the site and for a reasonable time after the closing of the site. The operator must also comply with any other conditions that may be deemed necessary to preserve and protect the ground and surface water quality within the vicinity of the disposal site.

In Vermont there are approximately twenty-five privately operated landfills within the state that have been checked by the solid waste division and have been deemed acceptable for the disposal of some quantities of oil-saturated debris. The sites are listed by drainage basin within the state's oil and hazardous materials contingency plan so that the most appropriate site to dispose of oily debris can be identified quickly when a spill occurs.

The cost of the polluting party for disposal of oily debris varies because the polluter must negotiate with the operator of the pre-approved landfill site at the time of the spill. Operators generally charge a

a higher price for the disposal of oily debris than municipal refuse because of monitoring, special handling and other considerations.

MASSACHUSETTS

David Standley, Commissioner
Executive Office of Environmental Affairs

There is a continuing problem of availability of suitable disposal methods for hazardous materials. Much more attention needs to be focused on the problem of preventing or eliminating those losses and on the waste generation processes themselves. Oil contaminated debris is one aspect of the whole problem of residuals management.

Several oil spill incidents have focused public attention on the problem, and led to an increased awareness by the general public of the environmental and economic effects of oil and oil spills on recreation, fishery, and wildlife resources.

Massachusetts has a number of programs underway. In 1966, the Division of Water Pollution Control, now in the Departmentzof Environmental Quality Engineering, adopted rules and regulations and established a program for the control, enforcement and abatement of pollution into the waters of the Commonwealth. More recently, the Secretary of Environmental Affairs has established a Resource Conservation and Recovery Act Task Force, co-chaired by the Commissioners of the Department of Environmental Management and the Department of Environmental Quality Engineering. This group is responsible for coordinating a state plan for the management and disposal of hazardous waste.

The current work program calls for:

--the identification of types and quantities of special wastes a disposal facility should be capable of receiving;

--a listing of criteria (economic, environmental, social, transportation, and legal) for evaluating sites in terms of their suitability for use as a hazardous and special waste disposal facility;

--the identification and preliminary evaluation of not more than 10 alternative sites in Massachusetts;

--the selection and detailed evaluation (including environmental assessment) of two sites;

--recommendation and public hearings on one preferred site.

This process is now underway and is expected to take about a year.

In the meantime, the Commonwealth is using the RESCO incineration facility in Saugus on a trial basis. Incineration, either directly or after some further handling and segregation, seems to be working, although there

are some problems associated with the onsite stockpiling, handling, and rehandling of the debris. This method is obviously applicable to combustible materials only, and will not work with large quantities of sand or snow contaminated with oil.

In addition, the Department of Environmental Management is looking for several potential sites which could be available in less than a year. It is expected that no such site will be established except through state action -- state acquisition of the property, and state management either directly or through contract to operate the facility.

Points which arose from the discussion included:

--coordination among state government agencies is an assignment of the Water Resources Board, which also, in effect, comprises the hazardous waste board. Contradictions in the present responsibilities of different government agencies are, then, more apparent than real, and there are at the present time, no plans to prepare clarifying or streamlining legislation. The clean-up contractor or the local municipal government, need deal only with the Department of Environmental Quality Engineering which is responsible for disposal, regulation, and control.

RHODE ISLAND

John Quinn
Division of Solid Waste Management
Department of Environmental Management

In Rhode Island, the regulatory responsibility for waste disposal is shared by the Department of Environmental Management and the Department of Health. There are a number of regulations which govern waste disposal.

Oil pollution control rules and regulations were developed by the Department of Health, but are now the responsibility of the Department of Environmental Management. The regulations deal principally with not permitting the spilling of oil, how to prevent spills, and clean-up requirements.

There are also minimum standards and regulations for industrial waste disposal sites and waste oil disposal sites. These regulations are administered by the Department of Health and enforced by the Department of Environmental Management. The standards established by the regulations are more stringent than those that govern general solid waste disposal facilities, and are primarily for liquid waste disposal.

In Rhode Island, the principal disposal sites, or the largest land disposal sites are operated by private contractors. Sanitary landfills or solid waste management facilities must be licensed. There are only about sixteen licenses, and engineering work required for obtaining a license makes it expensive to come by. Furthermore, if the landfill accepts oily wastes -- which are defined as hazardous solid waste -- there must be

monitoring wells installed which have to be analyzed by an independent laboratory at least every three months and these results must be submitted to the DEM. In fact, for oil spill debris that is composed of more than sand and oil or rock and oil, only two landfill sites could conceivably accept the debris.

Furthermore, the regulations covering liquid waste disposal facilities are so stringent, that testimony at a recent hearing on the regulations indicated not only is there no site in Rhode Island that would be acceptable; there is no site in New England that can meet the standards. Yet the regulations require that after September 23, 1978, hazardous wastes may be disposed of only in acceptable sites. Following the spill from the "Pennant", a waste disposal site in Cranston was created and monitoring wells installed. No problems have been reported in the four years monitoring has been conducted.

NEW YORK

Ron Maylath
Department of Environmental Conservation

In New York State there are about one thousand spills a year, of which about 75 percent are oil. The total volume of oil spilled has not varied much over the past seven or eight years, and most of the spills are small. But one or two or three percent of the spills are catastrophic, with 250,000 gallons or more spilled. The most costly of these catastrophic spills occurred in 1976, with a barge grounding on the St. Lawrence River. Some 340,000 gallons of Number 6 oil were spilled. It cost $8.5 million from the federal revolving fund to clean up 88 miles of shoreline, and approximately another $2 million to private owners. Cleanups involved cooperation not only with federal and state officials, but also with Canadian officials.

New York has had a number of disposal site problems, due to lack of adequate laws in regulations for disposal of hazardous materials, including oily waste.

Last year, however, new legislation was passed that will go into effect April 1, giving dual responsibility for oil spill clean up to the Department of Environmental Conservation and the Department of Transportation. The bill also established a $25 million spill clean up and compensation fund, to be financed through a license fee of one cent per barrel of oil transported or transferred into or within New York State the first time, involving facilities with a capacity of more than 400,000 gallons of petroleum.

The responsibilities of the Department of Environmental Conservation include the following:

1. DEC will certify through the Department of Transportation that the major facility has implemented or is in the process of implementing spill and discharge preventation, cleanup, and

disposal plans.

2. DEC will certify to the Department of Transportation that the major facility can provide necessary equipment and manpower to prevent, contain, and remove discharged oil. The facility can meet these requirements through its own equipment and staffing, or through contract arrangement with clean-up specialists.

3. DEC is to respond to all oil spills, to ascertain the environmental priorities, to provide technical expertise, to provide locations of environmentally sensitive areas, and to ascertain the procedures necessary to insure prompt and environmentally sound clean-up and disposal.

4. DEC will be a member of the Federal Regional Response Team.

The Department of Transportation has five responsibilities:

1. DOT will license major facilities after receiving the certification from DEC.

2. DOT will collect the license fees, which are payable monthly, until the $25 million fund is completely funded, or whenever it goes below $18 million.

3. DOT will also receive notification of the spill.

4. DOT, if the spiller does not act, will cleanup and remove the oil in accordance with the environmental priority and procedures set by DEC. DOT may hire contractors, and is expeced to do so whenever possible.

5. DOT has the responsibility of inventorying and establishing an emergency spill network of all state, county, and local highway department equipment.

Close cooperation will be maintained with the Coast Guard and EPA for the use of both funds and equipment.

A third state department -- the Department of Audit and Control -- will administer the clean-up and compensation fund. This includes collection of fees and fines, payment of administrative costs, and the taking of legal action against the spiller for costs incurred.

The party that spills the oil is liable for clean-up cost and disposal, the cost of restoring real or personal property, the cost of restoring natural resources, and the loss of income or earning capacity if actual loss is greater than 10 percent of actual inccome (such as resorts in marinas, and including related loss of state tax revenues). Each major facility must carry $50 million of liability insurance.

New York has set up specific types of disposal priorities for spills:

(a) for the recoverable oil, the first priority is to recycle, second to incinerate, third is land burial.

(b) for oil-soaked debris, the first priority is recycling, second is municipal or industrial incineration, third is natural degradation, fourth is land burial, fifth is a sanitary landfill; and last is on-site incineration.

(c) for hazardous substances (other than petroleum products), the first priority is to recycle, the second to incinerate, and the third is landfilling.

Aside from the actual clean-up operation, two other activities -- transport and disposal -- are involved.

The state requires annual registration of license for all clean-up contractors as waste haulers. A spill clean-up contractor who transports or hauls and/or disposes of oil, oil/water mix, oil-soaked or any other hazardous material is considered to be a waste hauler. Any government agency -- local, county, state, or federal -- which transports, hauls, and/or disposes of these types of wastes is also considered to be a waste hauler and must be registered with DEC. Also having to be licensed are pollution abatement committees and oil handling facilities or companies. If the waste hauler's destination is out of state, he must meet all requirements of the state of destination.

Also part of the state regulations is the requirement for waste haulers to have a disposal site or disposal means which has been approved by DEC as acceptable to the type of waste involved. In the case of oil spill wastes, the disposal site must have prior approval -- requiring, in effect, predesignated disposal sites. This is important, because a number of tests are required to determine the suitability of the site for various types and amounts of waste. This site approval is a time-consuming process and cannot be done quickly at the time of a spill.

Along with these regulations, no liquid oil, oil-water mix, or other liquid hazardous materials may be deposited in any type of landfill. And any oil containing more than five parts per million of PCB's cannot be used for dust control or for road oiling.

Approximately eighty waste haulers, with approved sites or disposal means, are now registered in the state to handle various types of waste involving oil, oil-water mix, or hazardous materials. Because some haulers have more than one site, there are about 120 such sites, although some are licensed for hazardous materials other than oil or oil-soaked debris. EPA and the Coast Guard have a list of these waste haulers and their disposal site, so that if the agency is contracting with a particular hauler, agency officials know whose disposal site is closest. The state is still part of the process to ensure that specific sites are handling the volume and nature of materials they were licensed to handle.

SECTION 3

FEDERAL REGULATIONS REGARDING OIL SPILL DEBRIS DISPOSAL

ENVIRONMENTAL PROTECTION AGENCY

Daniel K. Moon
Solid Waste Management Branch
Region I, Boston, MA

EPA is currently developing regulations under the authority of Section 3004 of the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 that set forth performance standards for owners and operators of hazardous waste treatment, storage, and disposal facilities. These regulations, which are expected to be published in draft form in August of this year, may affect how oily waste must be disposed of. Petroleum products contain materials such as heavy metals (Hg, Be, V) that may cause the product to be considered hazardous . Oily debris may also be considered a hazardous waste if it is particularly flammable (flash point less than 140°F). If the oily debris is considered to be hazardous, then the provisions of the Act will apply.

Subtitle C of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (P.L. 94-580), creates a regulatory framework to control hazardous waste. Congress has found that such waste presents "special dangers to health and requires a greater degree of regulation than does non-hazardous solid waste" [Section 1002(b)(5)]. Because of the seriousness of this waste problem, Congress intended that the States develop programs to control it. In the event that States do not choose to operate this program, EPA is mandated to do so.

This rule is one of a series of seven being developed and proposed under Subtitle C to implement the hazardous waste management program. It is important to note the definition of solid waste [Section 1004(27)] which encompasses garbage, refuse, sludges, and other discarded materials, including liquids, semi-solids, and contained gases (with a few exceptions) from both municipal and industrial sources. Hazardous wastes, which are a subset of all solid wastes and which will be defined by regulations under Section 3001, are those which have particularly significant impacts on human health and the environment.

Subtitle C creates a management control system which, for those wastes defined as hazardous, requires "cradle-to-grave" cognizance, including appropriate monitoring, record-keeping, and reporting throughout the system. Section 3001 requires EPA to define criteria and methods for

identifying and listing hazardous wastes. Those wastes which are identified as hazardous by these means are then included in the management control system constructed under Sections 3022-3006 and 3010. Those that are excluded will be subject to the requirements for non-hazardous solid waste being carried out by States under Subtitle D, under which open dumping is prohibited and environmentally acceptable practices are required. Oily debris will be controlled under either Subtitle C or D depending on whether or not it is considered hazardous.

Section 3003 addresses standards affecting transporters of hazardous wastes to assure that wastes are carefully managed during the transport phase. The Agency is exploring opportunities for meshing closely with proposed and current DOT regulations to avoid duplication in this area.

Section 3004 addresses standards affecting owners and operators of hazardous waste storage, treatment, and disposal facilities. These standards define the levels of human health and environmental protection to be achieved by these facilities and provide the criteria against which EPA (or State) officials will measure applications for permits.

Section 3005 regulations describe the scope and coverage of the actual permit granting process for facility owners and operators. Requirements for the permit application as well as for the issuance and revocation process are to be defined by these regulations. Section 3005(e) provides for interim permits during the time period that the Agency or the States are reviewing the pending permit applications.

Section 3006 requires the EPA to issue guidelines for State programs and procedures by which States may seek both full and interim authorization to carry out the hazardous waste program in lieu of the EPA-administered program.

Section 3010 regulations define procedures by which any person generating, transporting, owning, or operating a facility for storage, treatment, and disposal of hazardous wastes must notify EPA of this activity within 90 days of promulgation of regulations defining a hazardous waste (Section 3001). EPA intends to make provisions in these regulations for States to be delegated this function upon application to the Administrator. It is significant to note that no hazardous waste subject to Subtitle C regulation may be legally transported, treated, stored, or disposed, nor may interim permits be issued, unless this timely notification is given to EPA or a designated State.

The Act calls for the Agency to promulgate final regulations by no later than summer 1978 under all sections of Subtitle C. EPA anticipates a 4 to 6 month delay in this schedule. However, it is important for the regulated communities to understand that the regulations (Sections 2001-3005) do not take effect until six months after promulgation. Thus, there will be a time period after final promulgation during which public understanding of the regulations can be increased and those covered by the regulations can prepare to comply. During this same period, notifications required under Section 3010 may be submitted, and facility permit applica-

tions required under Section 3005 may be distributed for completion by applicants.

(Regulations are expected to be proposed in the fall 1978, and finalized early in 1979. Further information can be obtained from Dennis Huebner, Solid Waste Management Branch, EPA Region I, telephone: 617-223-5776).

FEDERAL HIGHWAY ADMINISTRATION

Matthew Pratt
Safety Investigator, Motor Carrier Safety Bureau
Boston, MA

Mr. Pratt briefly explained that the Federal Highway Administration Motor Carrier Safety Bureau does not regulate the interstate transfer of oily debris but is mainly concerned with hazardous, i.e., corrosive, flammable, or otherwise dangerous materials. It was pointed out that most states have no regulations of their own to control the transport of oily waste. Therefore, at the present time, there are no specific laws in the Northeast governing the transport of oily debris from a spill scene to either a stockpile or disposal site. It was observed that transportation of this material could be hazardous if basic precautions are not taken to minimize accidental ignition and spillage on highways.

SECTION 4

TECHNICAL ASPECTS OF OILY DEBRIS DISPOSAL

OVERVIEW

An oil spill often results in a considerable quantity of oily debris. The spill clean-up operation concentrates this debris in one area. Then, the question becomes how to dispose of the debris. Often there isn't any easy answer to this question because of local resistance to putting the collected debris into the municipal landfill. For that reason, a temporary repository is needed for the debris until its ultimate disposal can be arranged for. This process has taken over a year in some cases. Mr. Robert Landreth of the U.S. Environmental Protection Agency's Municipal Environmental Research Laboratory in Cincinnati, Ohio, described the results of some recent EPA research on liners and liner materials. These are useful in preparing an environmentally safe temporary stockpile for oil spill debris. The next speaker was Mr. John Farlow of the U.S. EPA's Industrial Environmental Research Laboratory in Edison, New Jersey. He described present EPA recommended strategies for disposal of the oil spill debris. The final afternoon speaker was Mr. John A. Malter of the Vermont Agency of Environmental Conservation's Department of Water Resources. He presented a case study of the Disposal of some oily debris by the land cultivation method (based on an EPA how-to-do-it manual entitled Oil Spill: Decisions for Debris Disposal, EPA-600/277-153a,b).

Liners for Stockpiling

Mr. Landreth began by describing an EPA research program to upgrade disposal sites with liner materials. The types of liners considered were polymeric membranes, ad-mixed material, soil sealants, and natural soil systems. The program began about 3 or 4 years ago with a survey of what was being used in industry. Two problems soon became apparent. The first is that if you have a generic class of synthetic material such as polyvinyl chloride (PVC), the quality of the material can be substantially changed by the addition or subtraction of different ingredients in the mix. For that reason you have to be very careful to match the particular type of waste you have with the exact material which you plan to use as a liner. The second major difficulty is that the reactive characteristics of different types of wastes (such as typical municipal wastes, oily wastes and stack scrubber wastes, not to mention hazardous wastes) are all very different from each other.

The next stage in the EPA program was to expose different types of liner materials to different types of wastes for varying periods of time.

The data points were 12 months, 24 months and 42 months. The expected outputs are twofold: first, to better define the problems with liner variability, and second, to develop a test protocol that other interested agencies can use. Differences in "permeability" were observed in the majority of liners during the study period. Some of these are due to the limitations of the liner material itself. Another set of problems relates to matching the liner material to the conditions expected. These include not only compatability with the type of waste to be placed in them but also the physical conditions (such as temperature and exposure to sunlight in a case where they are being used above ground for temporary stockpiling). In addition, it is essential that the liner be placed properly and carefully. Improper placement is probably the chief cause of liner failure fore short-term stockpiling use.

For short-term stockpiling the polyethylene and polypropylene materials are the most effective, although they are not particularly inexpensive. In an emergency situation perhaps the best thing to do would be to call your local, above-ground swimming pool dealer and see if you can get him to make some liner for you overnight. Mr. Landreth has lists of a number of them around the country who are willing to take on such jobs. Their product would be useful for the period of a year or perhaps two years. However, for long term, anerobic storage (i.e., a couple of thousand years for oily wastes in a typical sanitary landfill) we have no data on which to base a recommendation for any type of liner material.

Disposal Methods

Mr. Farlow's presentation emphasized the fact that there are now in existence several technically sound methods for disposal of oily debris. They have been reduced to engineering practice and, in fact, are actively practiced all over the country. For that reason, the disposal of oily debris is something that should not cause tremendous alarm in people's minds. It is, in fact, something that can be coped with in a fairly straightforward manner.

The EPA-recommended strategy for the disposition of oily wastes, in order of priority, is: first, to reclaim as much oil from the waste as possible and then to use directly as much of the oily waste itself as can be accomplished. Next, where air pollution standards can be met, thermally oxidize the remaining oily debris: that is, burn, incinerate, pyrolyze, compost, or whatever. The next choice would be (where the debris size permits) to land cultivate the oily debris: that is, make use of the aerobic microorganisms that are found in the soil everywhere people have looked (from Louisiana to Alaska). The final choice is to employ very long term, anerobic storage: that is, put the oily waste in a sanitary landfill or in a direct burial site.

In general, care should be taken that groundwater is not polluted either by the material disposed of or by it decomposition products. To that end a monitoring program may be necessary. Next, vegetation for direct or indirect human consumption should not be grown on a land cultivation site or sanitary landfill or burial site unless it can be proven

that no health risks will result. Finally, you should be aware that regulations now being developed for implementing the Resource Conservation and Recovery Act of 1976 will require either a Federal or a State permit for disposal of those materials deemed hazardous. At this point it is not known whether some oils may be deemed hazardous but it is a possibility.

Oil spill clean-ups are usually exciting, terribly busy and demanding operations. It is hard to make a rational site selection under those conditions. Therefore, the prudent official should recognize these difficulties and try to plan ahead. This planning would include selecting potential disposal sites, making a start toward obtaining the necessary approvals, permits, and variances from the various governmental authorities, and negotiating some sort of contingency agreement with the site owner.

Land Cultivation of Oily Debris in Northern Vermont

Mr. John Malter, the last speaker, described his solution to the oil spill debris problem in Burlington, Vermont. About 15,000 gallons of oily sludge from a coal gasification plan was land cultivated. The sludge consisted mainly of asphalts, coal tar, wood fibers, distillate and waste oils. The disposal site was about 70 feet by 100 feet with 6 inches of surface sandy gravel underlain by more than three feet of tight clay glaze. The oily sludge was spread to a depth of about 2 to 3" with a rake. The sludge was left for 10 days to dry out a bit and then a garden variety rototiller worked it into the soil. The rototilling took about 1 1/2 hours. The area was rototilled several times more. Controlled patches of ground were left representing each stage of the treatment. Winter rye was planted on a portion of the site approximately 60 days after the first rototilling. Laboratory results indicate a more than 90% reduction in the solvent extractable, organic materials between the dried uncultivated site in the control plot and the material that had been rototilled three times.

RESEARCH ON IMPOUNDMENT MATERIALS FOR STOCKPILING OF OILY DEBRIS

Robert Landreth of the Solid and Hazardous Waste Research Division, Municipal Environmental Protection Research Laboratory of the U.S. Environmental Protection Agency described some preliminary results of some ongoing research on the proper type of liners to be used for containing various types of liquid wastes. The intent of this project is to give guidance on which liner material to consider from a waste compatibility standpoint and not to specifically identify liner performance. A series of research projects have been initiated to develop a data base from which evaluation criteria or test protocol can be established.

The first step was to establish the state of the art with regard to materials used by the chemical industry in reaction vessels, pipes, and containers to obtain data on chemical interactions of wastes and potential liner materials. Liner materials considered were polymeric membranes, admixed materials, solid sealants, and natural soil systems. Wastes considered for containment included caustic petroleum sludge, acidic steel pickline waste, heavy-metal-bearing electroplating sludge, pesticide waste,

oily refinery sludge, pharmaceutical waste and wastes from the rubber and plastics industries.

The chemical characteristics of these wastes varies widely with regard to BOB, COD, TOC and suspended solids. An extensive literature review combined with discussions with manufacturers, fabricators, suppliers, and trade associations was performed resulting in the waste-liner matrix below. It should only be used as a guide because of variability of waste characteristics and various additives to polymeric compounds to improve performance or economic advantage.

Of particular interest to those responsible for oil spill cleanup are the tests performed on liners exposed to industrial hazardous sludge leachates. This study, the results of which are still being interpreted, was designed to provide more detail to the liner-waste compatibility matrix.

The objectives of this study are to determine the effects on selected liner materials as a result of exposing them to a variety of industrial wastes over an extended period of time; to estimate the effective life of the liner materials; to determine the cost-effectiveness of liner materials and to develop test procedures.

Both caustic petroleum and oil refinery sludges were tested on various polymeric membranes and admixed materials. Although the data is still being interpreted at this time, some preliminary observations can be made. It was found that oily wastes could not be safely contained with asphalt liners. Oily wastes with aromatic components may present problems for polymeric membranes except those membranes which are crystalline. It was also found that bentonite liners, polymer modified bentonite and soils may not be suitable for impounding strong wastes containing both aqueous and oil phases. These preliminary observations were made from bench seal studies conducted at the beginning of the exposure tests.

The next logical step in the research plan is field verification. The approach is to conduct a survey to identify disposal sites where liner materials have been installed. The survey is designed to obtain information relating to waste type, depth, age, type of liner material, owner, installer and other pertinent data on the disposal site. These data are being evaluated to determine if samples of liner materials can be obtained intact from sites of varying ages, then a long term field exposure data base for liner performance could be developed in a relatively short period of time at minimal expenditure.

In the future, EPA hopes to develop a manual on how to properly install a liner because the majority of liner failures appear to be due to improper placement.

Further information on the use of various liners for impoundments can be obtained from EPA's Municipal Environmental Research Lab, Solid Hazardous Waste Research Division, 26 West St. Clair Street, Room 171, Cincinnati, Ohio 45268.

TABLE 1. COMPATIBILITY OF LINER MATERIALS WITH VARIOUS INDUSTRIAL WASTES

Name of liner	Short name	Vulcanized	Caustic petroleum sludge	Acidic steel pickling waste	Electroplating sludge	Toxic pesticide formulation waste	Oil refinery sludge	Toxic pharmaceutical waste	Waste water from rubber and plastics industry
Polymeric Membranes									
Butyl rubber	HR	Yes	Yes	Yes	Yes	?	No	?	?
Chlorinated polyethylene	CPI	No	Yes	?	?	?	No	?	?
Chlorosulfonated polyethylene	CSM Hypalon	No	Yes	Yes	Yes	?	No	?	Yes
Elasticized polyolefin	3110	No	?	?	Yes	Yes	?	Yes	Yes
Ethylene propylene rubber	EPDM	Yes	Yes	Yes	Yes	?	No	?	Yes
Neoprene rubber	CR	Yes	Yes	?	?	?	?	?	Yes
Polyethylene	PE	No	Yes	?	Yes	Yes	Yes	Yes	Yes
Polypropylene	PP	No	Yes	?	Yes	Yes	Yes	Yes	Yes
Polyvinyl chloride	PVC	No	?	?	?	Yes	Yes	Yes	Yes
Admix Materials									
Asphalt concrete-hydraulic	HAC	—	Yes	No	No	?	No	?	?
Asphalt membrane	--	--	?	?	?	?	No	?	?
Soil asphalt	—	—	?	No	No	?	No	?	No
Soil cement	—	—	Yes	No	?	?	Yes	?	Yes
Compacted clay	—	—	No	No	No	?	Yes	?	Yes
Treated bentomite	—	--	No	No	No	?	Yes	?	Yes

Chemical compatibility of lining materials with various industrial wastes. Indicates the potential suitability of a given type of lining material for confining types of wastes. For a given type of lining material compositions vary considerably as do the composition and concentration of the waste and environmental conditions under which they would be confined.

Yes - Lining material is probably suitable for confining a wide range of wastes of the type indicated, using a wide range of formulations.
? - Questionable. Suitability depends on the specific waste and the specific liner material. Immersion tests should be run.
No - The lining material would not or probably not be suitable for confining the type of waste shown.

OIL SPILL CLEANUP DEBRIS DISPOSAL

John Farlow of the Resource Extraction and Handling Division, Industrial Environmental Research Laboratory of the U.S. Environmental Protection Agency presented an EPA viewpoint of technical considerations of oil spill debris disposal together with some slides and a short movie.

He has prepared a written version of his oral presentation. This written version, which as a number of summary tables, appears in the following pages. It is a condensation of some of the main points in the two-volume EPA publication, Oil Spill: Decisions for Debris Disposal, EPA-600/2-77-153 a & b.

OIL SPILL CLEANUP DEBRIS DISPOSAL

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ABSTRACT

Five recommendations for oil spill debris disposal are presented, including a priority ranking of disposal methods. These are based upon the results of Environmental Protection Agency-sponsored research and upon discussions between Office of Research and Development and Office of Solid Waste personnel. All agree that sound technology for the land disposal of oily wastes does exit today. References are given to literature providing detailed how-to-do-it information.

Three land disposal methods (land cultivation, sanitary landfill and burial) are discussed, and tables are presented of potential problems and solutions, site selection criteria, and comparisons between the methods (advantages, applicability to debris types, environmental considerations, and costs).

INTRODUCTION

One of the corollaries to Murphy's law states that whenever men, equipment and oil are involved together, a spill will occur sometime. This is as true on the sea as on the land. While the great majority of spills are small, the relatively few big ones can be spectacular. For example, in the Gulf of Mexico offshore oil production area a mere 5 spill incidents accounted for 85% of the total volume of oil spilled there, based on reports to the U.S. Geological Survey in 1971-1975[2].

Present practice is to clean up, to the extent possible, those spills either too large or in too sensitive an area to be ignored. If the spill is into the water, any floating debris present is coated with oil, as is the the coastal area where the slick comes ashore.[3] If the oil is spilled on land, oily debris will almost inevitably result.

One of the usual outcomes of a successful cleanup operation is a quantity of oily debris concentrated in one area, such as the parking lot at the town beach. By this time the cleanup crew will rapidly be losing interest in the project, while local citizens and their elected representatives want the debris taken away entirely, at once. Fortunately for these officials and operations personnel, some U.S. Environmental Protection Agency (EPA)-sponsored research has already resulted in a series of five recommendations (Table 1), and an oil spill debris

disposal how-to-do-it manual entitled Oil Spill: Decisions for Debris Disposal, Vol. I - Procedures Manual.[7] These amount to a statement of what we believe today. Although the research is still on-going, and much remains to be discovered and applied, I believe the recommendations and the manual, together, form a suitable basis for action now. The manual has already been distributed to EPA spill coordinators, state spill coordinators, state solid waste and water pollution control agencies, and U.S. Coast Guard strike teams and local pre-designated on-scene coordinators, among others.

OIL SPILL DEBRIS DISPOSAL RECOMMENDATIONS

I would like to present the recommendations in full (together with some comments) because they help to put the several common disposal methods into perspective. These recommendations have reached their present form as a result of discussions between myself and Bob Landreth (Solid and Hazardous Wastes Research Division, Cincinnati, Ohio), and Truett DeGeare and Fred Lindsey (Office of Solid Waste, Washington, D.C.). They may be spelled out in more detail (or modified) when the regulations implementing the Resource Conservation and Recovery Act of 1976 are put into effect.

1. Sound technology for the land disposal of oily wastes does exist today.

   Despite the nervousness displayed by some states with respect to oily debris, we believe this to be a statement of fact. Detailed discussion with supporting material may be found in the two references cited. I can make limited numbers of copies of Oil Spill: Decisions for Debris Disposal[7] available, and more can be obtained through NTIS. Land Cultivation of Industrial Wastes and Municipal Solid Wastes: State-of-the-Art Study[6] is now in preparation and expected to be in print by early summer of 1978.

2. The recommended disposition of oily wastes (in order of priority) is:

   a) reclaim as much oil from the waste, and use directly as much of the oily waste itself, as possible; and

      The first order of priority, naturally, is to recover as much of the lost energy or lubricant as possible. Next is to reduce the volume of the material by direct use of the oily waste itself, perhaps by incorporating it into a highway road bed. That portion which can't be reclaimed or used directly becomes, by definition, the oil spill debris disposal problem.

   b) where air pollution standards can be met, thermally oxidize (i.e.-burn, incinerate, pyrolyze, etc.) the remaining oily debris; or

      Whether the potential air pollution problems are surmountable or not is very much a function of location and circumstances. What may be appropriate in a Louisiana marsh (at the time of year when the marshes are usually burned anyway) may be totally inappropriate in the Los Angeles basin. Complete

combustion has the distinct advantage of converting the oil to carbon dioxide and water. No aromatics are left to get into the groundwater or complex organics to be taken up by plants growing at the disposal site.

c) where debris size permits, land cultivate (i.e.-aerobic microbially decompose) the remaining oily debris; or

Essentially everywhere investigators have looked, from Southern California to Point Barrow, Alaska; from Louisiana to Montana and northern Vermont; naturally-occurring bacteria and other micro-organisms capable of using oil as any energy source have been found. If the oily wastes are intimately mixed with the soil, and if proper amounts of oxygen, water and nutrients are supplied (either naturally or otherwise), the micro-organisms metabolize the oil with a speed which is primarily a function of the temperature and the degree of their previous conditioning. Debris size is a consideration chiefly because of the limitations of the equipment available to mix it well with the surface oil.

d) employ very long term anaerobic storage (e.g.-sanitary landfill or direct burial), together with adequate groundwater quality monitoring. Since fine grained soils (e.g.-clays and silts) have more surface area per unit weight and more sorptive capacity than coarse grained soils (e.g.-sand and gravel), long term storage sites should be located, wherever possible, on fine grained soil. Where poor soil conditions may result in hydrogeologic connection to groundwater, leachate collection and treatment shall be employed.

The chief point is that because anaerobic decomposition of oil proceeds so slowly, the material poses a potential threat to groundwater for periods very long compared to a human lifetime. In addition, many of the more toxic (aromatic) constituents of the oil are water soluble. Since burial and sanitary landfill sites can't be expected to maintain their watertight integrity for centuries, adequate water quality monitoring[5] is needed for as long as this form of storage is utilized, so that any breach of site integrity can be promptly detected and repaired. At sites were the soil is poor to start with, a special leachate collection and treatment system shall be employed.

3. The groundwater must not be polluted either by the material disposed of, or by its decomposition products.

If you've ever tasted oily water, you understand what one of the potential problems is. In addition, each oil is a collection of different compounds and isomers, in different ratios. Only a small fraction of the different probable metabolic pathways is known,

and even less is known about the health problems which might result from ingesting the many intermediate or final breakdown products. The conservative course seems to be the safest.

4. Vegetation for direct or indirect human consumption should not be grown on a land cultivation site or a sanitary landfill or a burial site, unless it can be proven that no health risks will result.

   Again, there are many unknown intermediate and final metabolic products. How they may be taken up in the various sorts of vegetation or may then affect human health is also unknown. Here, too, the conservative course seems best.

5. Regulations now being developed for implementing the Resource Conservation and Recovery Act of 1976 will require either a Federal or a State permit for disposal of materials deemed hazardous.

   No final decision has yet been made as to whether oily wastes will, or will not, be deemed hazardous.

DISPOSAL METHODS

Land cultivation (aerobic). Land cultivation can be carried out anywhere in the 48 contiguous states with sufficient soil depth (five inches in colder climates and eight inches in warmer) and where surface slopes do not exceed 6%. Naturally occurring bacterial populations exist just about everywhere and will multiply satisfactorily to decompose the oily debris when mixed thoroughly with the soil and when basic oxygen, moisture (water), nutrient (primarily nitrogen and phosphorous) and pH conditions are met. Land cultivation should not, however, be attempted in areas subject to washouts and flooding because of the pollution potential.

After access roads suitable for loaded trucks are prepared and brush, logs and rocks larger than six inches in diameter are removed, the top soil at the site should be loosened up (using a bulldozer and a ripper, if need be, to scarify any rotten rock present), and any needed soil conditioners (e.g., lime to adjust pH, or urea to provide sufficient nitrogen) mixed in with a rototiller. Runoff diversion channels sufficient to prevent surface drainage from flowing through the area, plus a berm and catch basin able to retain any oily sheen floated by rain, should then be constructed. The debris should be spread evenly over the surface in a layer one to five inches deep and allowed to weather several weeks until it no longer appears wet and sticky. Next, the debris should be thoroughly mixed into the soil with a rototiller, if possible (the same result also can be achieved with more effort using discs, harrows, plows or dozer blades). At least two complete passes over the site at right angles to one another usually are needed to achieve thorough mixing; at that point the oil will be so dispersed as not to be recognized as oil, and the site will look like recently plowed farm land. Mixing the soil again at increasing intervals (from weekly at first to seasonally after two years) will greatly increase the rate of decomposition. Additional fertilizer may be necessary for fastest results. Also, machinery will bog down in the mud if the fields are not first allowed to dry out after each rain. Native vegetation (weeds) will begin to re-establish itself the first year, but some planting may be necessary

to combat erosion during the non-growing season.

If stockpiling the oil spill debris is necessary for more than a few weeks (while completing disposal site selection and acquisition, etc.), the oil should be prevented from either running off over the surface or soaking directly into the ground by means of berms, catch basins and suitable plastic (e.g., polychloroprene reinforced with polyester[4]) or clay layers between the debris and the ground. Table 2 summarizes possible solutions to some common land cultivation problems.

Sanitary landfilling (anaerobic). Oil spill debris of any sort and size may be disposed of at any property designed and operated sanitary landfill[1]. The only technical adjustments relate to the possible need for extra manpower and machinery to handle the extra deliveries and the requirement for suitable fine-grained soils to line the lifts containing the oily debris. In addition, the complete portion must have an impermeable cap to prevent infiltration of rain and the oil from floating out. Table 3 summarizes possible solutions to some common sanitary landfilling problems.

Burial (anaerobic). Burial of debris, like sanitary landfilling, is usefull for oil spill debris of any sort and size and may take place either below grade or above. An advantage of the above-grade option is the ease in the detection of any leakage through the sides since only the base is concealed from view. For both options, access roads to the site suitable for loaded trucks must be prepared. Then the pit or trench must be prepared (below-ground option) and lined with suitably fine-grained material to reduce leakage. Usually layers of debris and soil are alternated and compacted. Their thickness is one or two feet each except where unusually bulky debris must be incorporated. The portions of the site exposed toward the atmosphere (top for below-grade options; top and sides for above-grade) are covered with a layer of fine-grain soil (to eliminate infiltration or leakage) and then a compacted layer of final cover two or three feet thick. Grasses should be planted to inhibit erosion, but slopes greater than about 4% may erode anyway. Table 4 summarizes possible solutions to some common burial problems.

Table 5 summarizes criteria which apply to the selection of any oil spill debris disposal site. Table 6 summarizes the advantages and disadvantages of alternative disposal methods, while Table 7 summarizes their applicability for different types of debris.

MONITORING

The purpose of monitoring is to serve as a check on potential leachate contamination by ensuring detection of an incipient pollution problem early enough to make remedial action possible.[5] The primary potential problems at oil spill debris disposal sites relate to contamination of begetation and of water. The possible incorporation into vegetation of toxic heavy metals and/or intermediate or final breakdown products of the debris poses a potential threat to human or animal consumers. As mentioned in the section on recommendations, the wisest course at this time (pending the outcome of what may turn out to be an extensive and complex research effort) would seem to be to ensure that vegetation growing on the disposal site is not consumed by humans or animals. Where this prohibition is enforced, monitoring is unnecessary;

otherwise, a relatively sophisticated (and costly) monitoring program is strongly recommended.

Contamination of groundwater by the debris also is highly undesirable and the likelihood can be minimized by carefully observing good site preparation and operation practices. However, where the anaerobic storage strategy (sanitary landfilling and burial) is employed, the pollution potential is present over essentially geologic time periods, and long-term monitoring programs are necessary to prevent water supply problems from developing. The goal of proper construction is to prevent the penetration of either meteoric or surface runoff water through the sides or top of the disposal site, or of groundwater through the sides or bottom. The monitoring program should include periodic collection and analysis of surface waters downstream from the site to detect the escape of disposal site contents (and also upstream to make possible a determination of whether any contamination detected downstream is in fact attributable to the disposal operation). All samples should be taken close to the site at least annually through permanent wells. An additional well in the disposal site itself to the low point of its "floor" will provide evidence of infiltration. Each well can be a vertical, polyvinylchloride pipe with a screened lower portion extending from five to 10 feet below the lowest expected level of the "aquifer" to several feet above the highest expected level. The well should be capped except when being sampled. Routine analyses should include determination of oil content, pH and organic acids. Table 8 summarizes corrective actions for some of the problems most common at disposal sites.

FINAL REMARKS

It should be noted that making a rational site selection, locating and negotiating with the owner, and obtaining the necessary approvals, permits and variances from state and local authorities are difficult to accomplish rapidly at any time, let alone while simultaneously cleaning up an oil spill. The prudent official should recognize the difficulties and try to plan ahead. A further set of complications results from the necessity of providing for long-term monitoring and of coping with the long-term liability potential whenever anaerobic disposal methods are used. Despite these factors, we believe that the methods presented are technically sound and also are feasible. Table 9 gives typical unit costs for oil spill debris disposal operations.

SUMMARY

To sum up briefly, the recommendations and the how-to-do-it manual provide a rational basis for action how. Land cultivation is feasible in many cases and should be considered because of its many advantages.

TABLE 1. OIL SPILL DEBRIS DISPOSAL RECOMMENDATIONS

Recognizing the operational need for agreed-upon priorities for the disposal of oil spill debris, the following 5 recommendations, based largely upon studies supported by the EPA Office or Research & Development, and agreed to by Truett DeGeare and Alfred Lindsey of the Office of Solid Waste, are offered.

I. Sound tehnology for the land disposal of oily wastes does exist today (see References below).

II. The recommended disposition of oily wastes (in order of priority) is:

a. reclaim as much oil from the waste, and use directly as much of the oily waste itself, as possible; and

b. where air pollution standards can be met, thermally oxidize (i.e.- burn, incinerate, pyrolyze, etc.) the remaining oily debris; or

c. where debris size permits, land cultivate (i.e. - aerobic microbially decompose) the remaining oily debris; or

d. employ very long term anaerobic storage (e.g. - sanitary landfill or direct burial), together with adequate groundwater quality monitoring. Since fine grained soils (e.g. - clays and silts) have more surface area per unit weight and more sorptive capacity than coarse grained soils (e.g. - sand and gravel), long term storage sites should be located, wherever possible, on fine grained soil. Where poor soil conditions may result in hydrogeologic connection to groundwater, leachate collection and treatment shall be employed.

III. The groundwater must not be polluted either by the material disposed of, or by its decomposition products.

IV. Vegetation for direct or indirect human consumption should not be grown on a land cultivation site or a sanitary landfill or a burial site, unless it can be proven that no health risks will result.

V. Regulations now being developed for implementing the Resource Conservation and Recovery Act of 1976 will require either a Federal or a State permit for disposal of materials deemed hazardous.

References:

TABLE 2. LAND CULTIVATION OF OIL SPILL DEBRIS: POSSIBLE OPERATIONAL PROBLEMS AND SOLUTIONS

Possible problem	Solution
- Inclement weather hindering site preparation and/or mixing	- Stockpile debris in prepared, diked area until weather improves
- Difficulty in scarifying soils	- Rip soils with track dozer pulling double or single ripper blades prior to rototilling
- Slow oil decomposition	- Till the oil/soil mixture more frequently
	- Add fertilizers (such as urea and phosphates) or water
- Erosion of land surface	- Regrade the surface to maintain no more than a 1% to 2% slope.
- Runoff of oily material	- Regrade the surface
	- Construct berms
	- Construct runoff catch basin downstream from the area

(Based on Stearns[7])

TABLE 3. SANITARY LANDFILLING OF OIL SPILL DEBRIS: POSSIBLE OPERATIONAL PROBLEMS AND SOLUTIONS

Possible Problem	Solution
- Oil not absorbed by refuse (over-saturated or under-saturated)	- More mixing with refuse until adequate mix is secured
- Ignition of oily debris/refuse	- Extinguish flame; prevent by installing spark arrestors on equipment and assuring they have mufflers above equipment
- Leaching of oil into groundwater (vertical infiltration of water from surface)	- Reduce percolation by improving cover material; slope surface to encourage runoff
- Leaching of oil into groundwater (vertical migration down through bottom)	- Dip up landfill and reseal bottom
- Leaching of oil into groundwater (groundwater flow through refuse)	- Reduce groundwater level through pumping; excavate material and install liner
- Erosion of cover soil	- Place more cover soil; sow with grasses and protect until grass grows

(Based on Stearns[7])

TABLE 4. DIRECT BURIAL OF OIL SPILL DEBRIS: POSSIBLE OPERATIONAL PROBLEMS AND SOLUTIONS

Possible problem	Solution
- Groundwater contamination	- Define the extent of the contamination and institute the necessary corrective measures, e.g., pumping, installing groundwater interceptor trenches, excavating point-source materials
- Surface water contamination	- Determine the source (groundwater or surface waters) and institute remedial measures, i.e., if source is groundwater, use corrective measures as in "groundwater contamination," above; if surface water over the site is becoming polluted, then the area where the surface water comes into contact with debris must be defined corrected by covering the debris with soil and/or diverting surface waters
- Slumping of fill	- Placement and compaction of additional cover soils
- Cover grasses not germinating	- Re-sow and evaluate choice of grass and reason for failure; fertilization or chemical soil adjustment may be required.

(Based on Stearns[7])

TABLE 5. SUMMARY OF OIL SPILL DEBRIS DISPOSAL SITE SELECTION CRITERIA

Factor	Criterion
Land use	Planned use of the site for debris disposal should be compatible with on-site and adjacent land use.
	Disposal at a sanitary landfill would meet this criterion fully. Debris disposal in a residential area may not be compatible.
Water quality	The site should not be a source of water pollution by oil.
	Disposal on porous soil overlying potable groundwater or in an area subject to flooding would not meet this criterion. Sites that do not overlie groundwater (or, if they do, have a clay layer in between) are likely to offer the best protection for groundwater.
Location	Sites should be situated as closely as practical to the point(s) where oil spill debris is (or might be) collected or stockpiled.
Access	Existing access roads into the site should be of all-weather construction or such roads should be constructable in an emergency situation.
	A site that cannot be readily accessed is of little use. Access into a muddy farm may be temporarily facilitated by placement of a gravel road or military landing mats.

(Based on Stearns[7])

TABLE 6. ADVANTAGES AND DISADVANTAGES OF ALTERNATIVE DEBRIS DISPOSAL METHODS

Disposal Method	Advantages	Disadvantages
Land cultivation	- Oil is degraded, minimizing long-term environmental threat	- Opportunity for oil volatilization and thus air pollution increased
	- Land surface reusable for debris or other purposes	- Periodic soil mixing required; frequency dependent upon soil conditions
	- Soil properties may be improved	- Relatively costly
		- Stockpiling at disposal site may be necessary
		- May be impractical to implement during inclement weather
Landfilling with refuse	- Minimal equipment needs	- Land is dedicated to disposal indefinitely
	- Relatively low initial cost	- Influx of oil spill debris may overtax available equipment and personnel
	- Minimal site preparation	- Long-term pollution potential
	- Many landfills available	- Long-term monitoring desirable
Burial	- Oil encapsulated, minimizes volatilization	- Land is dedicated to disposal indefinitely
	- Operations completed relatively quickly	- Oil remains undegraded for long periods with consequent long-term pollution potential
	- Land surface can be returned to pre-disposal appearances	- Long-term monitoring desirable

(Based on Stearns[7])

TABLE 7. APPLICABILITY OF DISPOSAL METHODS TO DIFFERENT TYPES OF OIL SPILL DEBRIS

Disposal method	Size of solid mater	Biodegradability of debris	Oil content
Land cultivation	- Debris should be relatively small in size, less than 15 cm (six inches, e.g., oiled soils; some larger vegetation may be acceptable, such as seaweed or brush	- Predominately oils and soils are best; non-degradable sorbents or inorganic trash should not be present	- Land cultivation best suited for heavily oiled debris
Landfilling with refuse	- No limitation on size	- No limitation	- In general no limitations on debris oil content; regulatory agencies may object to disposal of heavily oiled or high water content debris in a newer landfill where relatively little refuse is present to absorb the liquids
Burial	- In general, no size limitation; bulky debris, such as poles, may pose operational problems; disposal trenches may require widening to accommodate bulky items	- No limitation on materials	- No limitation on oil content as site conditions

(Based on Stearns[7])

TABLE 8. CORRECTING ENVIRONMENTAL PROBLEMS

Problem	Possible solutions
Infiltration of groundwater into	- Pump out groundwater to drain upstream area - Construct diversion channels - Construct peripheral subsurface drains to intercept groundwater flow - Rebuild "impermeable" walls
Surface runoff of oily materials from site	- Install impoundment dikes or berms - Improve upstream diversion channels - Recycle runoff to debris disposal area (if quantity is small enough)
Ponding of water on surface of disposal site	- Regrade surface; possibly apply more cover soil - Establish vegetation to both increase evapo-transpiration and reduce runoff velocities
Leaching of oily matter from debris mass to groundwater	- Intercept leachate with trench - Pump out excess moisture from debris mass: either recycle pumped-out water or remove for treatment at an approved facility - Rebuild "impermeable" walls
Impeded oil degradation at land cultivation site	- Rototill or disc the soil/oil mixture more frequently - Add nutrients or other amendments

If above-noted remedial actions do not solve environmental problems, be certain that debris disposal site is actually the source of contamination. If so, removal of debris to another site may be the last resort.

(Based on Stearns[7])

TABLE 9. ESTIMATED UNIT COSTS FOR OIL SPILL DEBRIS DISPOSAL OPERATIONS

Item	Unit Cost @ ($/unit)
Site geophysical and engineering studies	10 to 12% of site development costs
Access road construction#	4.5 to 5.00 per ft
Site preparation (clearing, scarifying, grading, where necessary)	600 to 700 per acre
Excavation and covering of trenches (for burial)	1.00 to 1.30 per yard^3
Application of fertilizer, other soil amendments (for land cultivation only, if necessary)	180 to 200 per acre per application
Transportation of debris to site$	0.05 to 0.07 per yard^3 per mile
Mixing debris with soil (initial and periodic mixing of debris with soil)+	80 to 100 per acre per mixing period
Monitoring well installation*	180 to 250 or more per well
Seeding surface of disposal area	180 per acre
Laboratory sample analysis:	
pH	5 to 7
Oil content	25 to 50
Organic acid	10 to 20
Disposal gate charge at sanitary landfill=	50 to 100 per day
Sanitary facilities, water, and communications (at remo land cultivation and burial sites)	50 to 100 per day
Drainage channels&	0.5 per ft
Contingencies	12 to 15% of site development costs

\# - 20 ft wide, gravel road
\+ - assumes a D-7 size track dozer pulling a rototiller covering five acres per day
= - charge varies significantly depending on geographical area
@ - all costs in 1976 dollars (Based on Stearns[7])
$ - assumes dump truck or tractor-trailer rig
* - depends on many variables, including soil type, depth to groundwater (if any), and drill rig used
& - dirt trench

LAND CULTIVATION OF OILY DEBRIS IN NORTHERN VERMONT

John Malter, of the Vermont Agency of Environmental Conservation, described a pilot program for land cultivation of oily debris, in northern Vermont. Land cultivation can be an effective means of disposal in the event of contamination of large quantities of degradable oil saturated debris, such as sand, vegetation, or soil.

This technique has not been used extensively in New England because micro-organisms present in the soil are slowed by cold weather. Thus, it may be necessary to stockpile the debris before land cultivation can begin.

However, in June 1977, an oil spill occurred, offering the opportunity to test land cultivation techniques described in a draft of EPA's manual Oil Spill: Decisions for Debris Disposal.

A coal gasification plant that had operated in Burlington, Vermont between 1908 and 1966 had used as a sludge dumping site an area which bordered an abandoned canal that led to Lake Champlain. The sludge consisted of asphalts, coal tar, wood fibers, and distillate and waste oils. In the spring of 1977, a contractor with the City of Burlington was using the land bordering the canal as a fill site during the construction of a municipal parking garage. During this activity, some fill was dumped too close to the canal, and some of the buried oil debris oozed out of the ground and entered the canal.

The Coast Guard and the state Department of Water Resources responded to the incident, and once the spill material was contained, it had to be removed for final disposal. The local landfill would not accept the waste, nor could it be rerefined because most of the volatile components had degraded over the years. The nearest incinerator where the waste could be burned was in Maine, too far away to be an economically feasible solution.

But the Vermont landowner agreed to try land cultivation. A site about 70 by 100 feet was chosen about 300 feet down from the spill; and was graded, raked and bermed with drainage ditches to intercept surface runoff. The site had six inches of sand and sandy gravel on the surface, and was underlain by more than three feet of tight lake glaze. Large rocks on the site were removed. The site was ready on June 10, when 1500 gallons of oily sludge was pumped onto the site and spread to a thickness of two to three inches over approximately one half of the site.

The sludge was left for ten days, and on June 20 a garden rototiller was used to mix the oil and soil together in order to expose maximum amounts of the oily material to oxygen and soil material. The site was tilled first in a north-south direction, and next in an east-west direction. A small section of the spread area was left untilled as a control site. Each tilling took about an hour and a half for one man to complete.

On July 6, 1977, sixteen days after the first tilling,and twenty-six days after the sludge had initially been spread, sludge in the once-tilled

section had broken down to approximately one-half to three inch clumps. The untilled sludge resembled a dry, black mud after the twenty-six days of drying. A second control area, this one in the once-tilled area, was staked out; and the remainnig area tilled for the second time. A third tilling was done July 20th, forty days after the sludge had been spread. Noticeable additional decomposition had taken place. By August 25th even the untilled material had been bleached by the sun and looked about the same color as the tilled soil. On that same day, a new test plot was staked and winter rye grass was planted to test the effect of the oily material on vegetation. By October 25th the grass was growing throughout the test plot. No further tilling was done, since the three earlier tillings appeared to distribute the oily debris with the soil. Depending on the volume of the sludge, the weather conditions, and the soils, other materials may need to be added (such as nutrients, water and lime) or more frequent tilling may be necessary. Each case will require a special set of criteria, which can be developed by using the EPA manual as a guide.

Preliminary sampling of the sludge-- when first spread, the uncontaminated soil at the disposal site, the dry untilled sludge, and the totally tilled sludge and soil-- were taken for analysis at the U.S. Army Corps' Regions Research Laboratory. The initial results indicated a more than 90 percent reduction in the solvent extractable organic material between the dried, uncultivated sludge and the material rototilled three times. Heavy metals were also sampled for, although, at the time of the workshop, results had not yet been received. It is especially important to take these samples if the land is going to be used for crops. Further, because the question of risk of consuming vegetation planted on a land spreading or other disposal site does exist, it is best to avoid human or animal sonsumption of the vegetation until further studies in the field have been done. Groundwater and surface water monitoring in the area used for land disposal is also necessary.

The landspreading demonstration, even though still in the very early stages in Vermont, does show that it can be a viable alternative for oily debris disposal in New England.

This and the other options analyzed in the EPA research manual will be described in a regional guide for the disposal of oil saturated debris in the Lake Champlain area. This guide is being prepared as a joint project of the New England River Basins Commission's Lake Champlain Basin Study and the Vermont Agency of Environmental Conservation. Specifics for debris disposal are discussed, such as the petroleum transportation and storage network, the existing access to Lake Champlain to remove spilled debris for disposal, and the natural resources in the area as they relate to developing suitable disposal sites. With this guide, and the EPA film and research material, the state can give an objective presentation on debris disposal to municipalities, regional planning commissions, and other interested parties. Governing entities can then decide for themselves, prior to the confusion of a major spill, what disposal alternatives they would like to establish within their own regions. Thus the groundwork can be done for procuring sites for potential use in the event of a major spill.

Other Discussion

In response to a question about the biodegradable characteristics of the various parts of oil (such as asphalt versus petro-chemical oils), Mr. Farlow noted that the composition of oil is not constant, even from the same field and that same well, making it very difficult to be precise about exactly what components and how much of them are biodegradable. Despite this difficulty in characterizing oils, a number of oily wastes have been examined, and it has been shown that the majority (probably over 90 percent) of the hydrocarbons can be metabolized over a period of one to three years.

APPENDIX A

SUMMARY: EPA OIL SPILL DEBRIS DISPOSAL

RECOMMENDATIONS

Recognizing the operational need for agreed-upon priorities for the disposal of oil spill debris, the following five recommendations, based largely upon studies supported by the EPA Office of Research & Development, and agreed to by Truett DeGeare and Alfred Lindsey of the Office of Solid Waste, are offered:

1. Sound technology for the land disposal of oily wastes <u>does</u> exist today (see References 1 and 2 below).

2. The recommended disposition of oily wastes (in order of priority) is:

   a. reclaim as much oil from the waste, and use directly as much of the oily waste itself, as possible; and

   b. where air pollution standards can be met, thermally oxidize (i.e. - burn, incinerate, pyrolyze, etc.) the remaining oily debris; or

   c. where debris size permits, land cultivate (i.e. - aerobic microbially decompose) the remaining oily debris; or

   d. employ <u>very</u> long term anaerobic storage (e.g. - sanitary landfill or direct burial), together with adequate groundwater quality monitoring. Since fine grained soils (e.g. - clays and silts) have more surface area per unit weight and more sorptive capacity than coarse grained soils (e.g. - sand and gravel), long term storage sites should be located, wherever possible, on fine grained soil. Where poor soil conditions may result in hydrogeologic connection to groundwater, leachate collection and treatment shall be employed.

3. The groundwater must not be polluted either by the material disposed of, or by its decomposition products.

4. Vegetation for direct or indirect human consumption should <u>not</u> be grown on a land cultivation site or a sanitary landfill or

a burial site, unless it can be proven that no health risks will result.

5. Regulations now being developed for implementing the Resource Conservation and Recovery Act of 1976 will require either a Federal or a State permit for disposal of materials deemed hazardous.

References:

1. Oil Spill: Decisions for Debris Disposal (Vol. I and II), EPA-600/2-77-153 a & b, 1977. U.S. Environmental Protection Agency Cincinnati, Ohio.

2. Land Cultivation of Industrial Wastes and Municipal Solid Wastes: State-of-the-Art Study, U.S. Environmental Protection Agency Report (in preparation).

John S. Farlow (IERL) and Rober Landreth (MERL)

APPENDIX B

STATE LEGISLATIVE ANALYSES

These analyses of legislation relating to several policy areas relating to oil spill debris disposal were provided by the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New York, and New Jersey for this workshop. A consideration of them will indicate the amount of similarity (or dis-similarity) among their legislative mandates.

TABLE B-1. STOCKPILING, TRANSPORTATION AND DISPOSAL OF OIL DEBRIS

State: Maine

Contact: Marc Guerin, State of Maine DEP, State House, Augusta, ME 04333.

POLICY AREA

Disposal of Oily Debris (Existing and Future Sites)

A. Incineration

B. Land application

C. Landfills

Stockpiling of Oily Debris

APPLICABLE LAWS, REGULATIONS, POLICY

A. Open Buring 38 MRSA Chapter 4 §599

B. Site Location of Development Title 38 MRSA Chapter 3 §481.

Amendment to the Septic-Tank and Cesspool Waste Act 30 MRSA Chapter B-A §1321.

C. Solid Waste Disposal Areas Location Title 38 Mrsa Chapter §421.

Site Location of Development Title 38 MRSA Chapter §481.

Pollution and corruption of waters and lands of the State prohibited Title 38 MRSA Chapter 3 §543.

ADMINISTERING AGENCY

A. DEP - Air Bureau, Local Fire Departments.

B. DEP - Land Bureau and Solid Waste

C. DEP - Solid Waste and Land Bureau

DEP - Division of Oil Conveyance Services - Bureau of Water Quality Control.

PENDING LEGISLATION

None

REMARKS

(Such as conflicting local ordinances)

No conflicting ordinances.

Difficult to find correct soils, maintain necessary temperatures.

Sites would have to be engineered.

To date - very little private interest.

Oil contamination of all waters of State is prohibited including groundwater.

APPLICABLE LAWS, REGULATIONS, POLICY

1. Alteration of Coastal Wetlands Title 38 MRSA Chapter 3 Article 5 §471.

2. Great Ponds Alterations Title 38 Chapter 3 §422.

3. Public Law 353 Amendment to the Septic Tank and Cesspool Waste Act 30 MRSA Chapter 13-A §1321.

4. Solid Waste Disposal Areas; Location Title 38 Chapter 3 §421.

5. Removal of Prohibited Discharges Title 38 Chapter 3 §548.

ADMINISTERING AGENCY

DEP - Land Bureau. DMR - Coastal Wardens State Planning

DEP - Water Bureau Inland Fish & Game Wardens

Solid Waste Division - DEP Bureau of Land Quality Control

DEP - Solid Waste

DEP - Oil Conveyance

PENDING LEGISLATION

Guidelines in the process of development.

Rewrite of Solid Waste Operating-Regulations.

REMARKS

Emergency situation generally associated with spills, overrides the need for permits, but when time is available a permit is obtained.

Some differences among municipalities.

Spiller pays all fees including disposal costs - strict liability.

Regarding transportation of Oily Debris to Disposal Sites, some municipalities have ordinances concerning transportation of leaking materials from dump truck bodies - no complete list of these municipalities is available.

TABLE B-2. STATE LAWS, REGULATIONS, AND POLICY GOVERNING THE STOCKPILING, TRANSPORTATION, AND DISPOSAL OF OILY DEBRIS

State: New Hampshire

Contact: Thomas L. Sweeney, Chief, Bureau of Solid Waste, Department of Health & Welfare, State Laboratory Building, Hazen Drive, Concord, New Hampshire 03001, 603-271-2605 or

Mark J. Chittum, Coastal Resources Management Program, Office of Comprehensive Planning, 26 Pleasant Street, Concord, New Hampshire 03079, 602-271-2155

Policy Area

Stockpiling of Oily Debris

Applicable Laws, Regulations, Policy

1. Unclear -- possibly RSA 147:25 "Public Dumps" and/or RSA 147:30-a Private Disposal Site

2. RSA 146-A "Oil Spillage in Public Waters

Administering Agency

1. Department of Health and Welfare, Division of Health Services, Bureau of Solid Waste

2. New Hampshire Water Supply and Pollution Control Commission

Remarks (such as conflicting local ordinances)

1. Use of this law to govern stockpiling of oily debris is contingent on the interpretation that a short-term stockpiling operation is either a public or private dump.

   To certify either a private or public dump application must be made by the selectmen, board of health or corresponding public agency. This implies that the municipality has initial approval authority.

2. WSPCC has power to order owner of stockpiled debris to cease pollution of ground or surface water by oil, if they can prove it.

Policy Area

Transportation of Oily Debris to Disposal Sites

Applicable Laws, Regulations, Policy

1. RSA 249:51 "Spillage of Materials"

2. RSA 147:30f "Waste from Out-of-State"

Administering Agency

1. NH Public Works and Highways

2. Division of Health Services, Bureau of Solid Waste

Remarks (such as conflicting local ordinances)

1. No vehicle shall be driven or moved on any highway unless such vehicle is so constructed or loaded as to prevent any of its load from dropping, sifting, leaking or otherwise escaping.

2. Disposal of waste matter originating from out-of-state is prohibited.

Policy Area

Disposal of Oily Debris

a. Incineration

b. Land application

c. Landfills

d. Open burning

Applicable Laws, Regulations, Policy

a. Existing air pollution laws

b. Unclear

c. RSA 147:25 "Public Dumps" and RSA 147:30a "Private Disposal Sites"

d. Existing air quality laws

Administering Agency

a. Air Pollution Control Agency

c. Division of Health Services, Bureau of Solid Waste Management

d. Air Pollution Control Agency

Pending Legislation

Comprehensive legislation governing disposal of solid and hazardous wastes will be submitted to the next session of the legislature.

Remarks (such as conflicting local ordinances)

a. Local and regional incinerator developments coordinated with Bureau of Solid Waste

c. State approves dump upon application from local municipality

d. The Air Pollution Agency will give an emergency permit to burn oily debris

TABLE B-3. STATE OF VERMONT

Contact Person: Don Marsh, Air and Solid Waste Division, Agency of Environmental Conservation, State Office Building, Montpelier, VT 05602, 802-828-3395

Policy Area

I. Stockpiling of Oily Debris

A. Applicable Laws, Regulations, Policy

Vermont Statutes Annotated (1977) Title 10, Chapter 159
Solid Waste Management Section 6606

Section 6606. Hazardous waste certification

a. No person shall store, transport, treat, or dispose of any hazardous waste without first obtaining certification from the secretary for such facility, site or activity. Certification shall be valid for a period not to exceed five years.

b. Certification for land treatment and disposal of hazardous waste shall include a statement of manner of compliance with all requirements in section 6605 (b) pertaining to sanitary landfills in addition to the following:

1. Identification of all hazardous wastes to be handled at the facility, including but not limited to, the expected amounts of each type of waste in the form in which it will be accepted;

2. Detailed descriptions of all treatment processes and technologies and provisions to insure that these processes are carried out in accordance with the designed plan;

3. Proposed final disposal and perpetual care for all residuals solid, semi-solid, and liquid generated by the treatment facility;

4. Evidence of liability insurance, in amounts as the secretary may determine to be necessary for the protection of the public health and safety and the protection of the environment;

5. Evidence of financial responsibility in such form and amount as the secretary may determine to insure that, upon abandonment, cessation, or interruption of the operation of the facility or site, all appropriate

measures are taken to prevent present and future damage to the public health and safety and to the environment;

6. Evidence that the personnel employed at the hazardous waste treatment or disposal facility or site have met such qualifications as to education and training as the secretary may determine to be necessary to assure the safe and adequate operation of the facility or site.

B. Administering Agency

Agency of Environmental Conservation
State Office Building
Montpelier, Vermont 05602

C. Pending Legislation

None

D. Remarks

If considered to be hazardous there may be additional local or state regulations.

II. Transportation of Oily Debris to Disposal Sites

A. Applicable Laws, Regulations, Policy

Vermont Statutes Annotated (1977) Title 10, Chapter 159 Solid Waste Management Section 6606 (See I. Stockpiling of Oily Debris Sec. 6606)

B. Administering Agency

Agency of Environmental Conservation
State Office Building
Montpelier, Vermont 05602

in conjunction with: Transportation Agency

C. Pending Legislation

None

D. Remarks

If considered to be hazardous there may be additional local or state regulations

III. Disposal of Oily Debris (Existing and Future Sites)

A. Incineration

1. Applicable Laws, Regulations, Policy

Vermont Statutes Annotated (1977) Title 10 Chapter 23, Air Pollution Control (copy of regulations enclosed)

2. Administering Agency

Agency of Environmental Conservation
State Office Building
Montpelier, Vermont 05602

3. Pending Legislation

4. Remarks

Applicable in all cases

B. Land Application

1. Applicable Laws, Regulations, Policy

Vermont Statutes Annotated (1977) Title 10 Chapter 159 Solid Waste Management Section 6605

Sec. 6605 Treatment and disposal facility certification

a. No person shall construct, substantially alter, or operate any treatment or disposal facility without first obtaining certification from the secretary for such facility, site, or activity. Certification shall be valid for a period not to exceed five years.

b. Certification for a sanitary landfill shall:

1. Specify the location of the sanitary landfill including limits on its horizontal and vertical development;

2. Require proper operation and development of the sanitary landfill in accordance with the engineering plans approved under the permit;

3. Specify the projected amount and types of waste material to be disposed of at the sanitary landfill;

4. Specify the type and numbers of suitable pieces of equipment that will operate the landfill properly;

5. Obtain provisions for ground and surface water monitoring throughout the life of the site and for a reasonable time after closure of the site;

6. Contain such additional conditions, requirements, and restrictions as the secretary may deem necessary to preserve and protect the ground and surface water quality in the vicinity of the sanitary landfill. This may include, but is not limited to, requirements concerning reporting, recording, and inspections of the operation of the site.

2. Administering Agency

Agency of Environmental Conservation

3. Pending Legislation

None

4. Remarks

Applicable in all cases

C. Landfills

1. Applicable Laws, Regulations, Policy

Vermont Statutes Annotated (1977) Title 10 Chapter 159 Solid Waste Management Section 6605 (See B. Land application above)

2. Administering Agency

Agency of Environmental Conservation

3. Pending Legislation

None

4. Remarks

Applicable in all cases

TABLE B-4. STATE LAWS, REGULATIONS AND POLICY GOVERNING THE STOCKPILING, TRANSPORTATION AND DISPOSAL OF OILY DEBRIS

State: Massachusetts

Contact: Sharon Alexander, Massachusetts Office of Coastal Zone Management, 100 Cambridge Street, Boston, MA 02202, 617-727-2808

POLICY AREA - STOCKPILING OF OILY DEBRIS

I. Laws, Regulations and Administering Agency

Chapter 21 of the Massachusetts General Laws includes:

a. Rules for the prevention and control of oil pollution in the Commonwealth. These rules were adopted by the Division of Water Pollution Control (DWPC) and cover the prevention and control of discharges, spillage, etc. of oil into the Waters of the Commonwealth.

b. Hazardous Waste Regulations of 1973, adopted by the Hazardous Waste Board and the Water Resources Commission, to be implemented by the Division of Water Pollution Control. These regulations give DWPC the responsibility to issue licenses to oil cleanup contractors and to oversee stockpiling activities.

II. Policy and Issues

DWPC locates temporary sites for stockpiling of oily debris. Often, these are located on beaches, just above the high tide line. Such sites are only appropriate for very short-term storage. In situations where location of an ultimate disposal site is a problem, stockpiling on beaches is not acceptable. In the past, such areas as state beach parking lots and federal seashore land have been used for stockpiling, with storage in 55 gallon drums. Use of these sites requires individual, time-consuming negotiations with Federal and State Forest and Parks officials, and/or local fire departments, Boards of Selectmen, Boards of Health, shellfish officers and harbormasters. In addition, Forest and Parks officials have major problems with the future use of these areas for stockpiling because they fear that the drums will not be removed from the sites in a timely manner. Thus, there are two issues. DWPC wants pre-designated storage sites or at least an easier arrangement for acquiring use of sites. On the other hand, other agencies want assurances of ultimate disposal sites prior to giving consent to temporary storage on state or federal property.

POLICY AREA - TRANSPORTATION TO DISPOSAL SITES

I. Laws, Regulations and Administering Agency

DWPC has the responsibility, through the Hazardous Waste Regulations,

to issue licenses and inspect vehicles of cleanup contractors. It is the contractors who do the actual cleanup, transport, and disposal operations, under DWPC supervision.

II. Policy and Issues

Contractors have never had to obtain local permits for the transport of oily debris. However, M.G.L. Chapter 111 provides that if a local Board of Health decides that the oily debris can be considered an "offensive substance", it may require a local permit or require modification of transport activities.

POLICY AREA - DISPOSAL OF OILY DEBRIS (EXISTING AND FUTURE SITES)

I. Laws, Regulations and Administering Agency

In Massachusetts, the private cleanup contractor is responsible for locating disposal sites which meet state regulations. DWPC inspects the disposal activities to ensure compliance. DWPC likes this systems, as opposed to one in which the polluter is responsible for finding and funding a site. In the latter case, the state would have much less control over the polluter than it now has over the contractor, who is licensed and inspected by DWPC.

State disposal authority is combined among several agencies depending upon the disposal method chosen.

(a) The Hazardous Waste Regulations, section 5.1, administered by DWPC say that "land spreading and incineration of waste oils will be permitted only if it is shown that reprocessing or direct use is not feasible or practical and if such methods meet all applicable environmental standards."

(b) Hazardous Waste Regulations, section 3.2 say "no person shall operate a waste disposal facility, landfill site or storage facility for hazardous wastes without having obtained a license from DWPC." Also, any land disposal site is subject to Department of Environmental Quality Engineering (DEQE) review, administered by the Division of Air and Hazardous Materials (DAHM).

(c) Chapter III, section 150A of M.G.L. says that DEQE (DAHM) has the responsibility for the disposal of solid wastes by sanitary landfill and for the assignment of sites for the establishment and operation of refuse disposal facilities. Site assignment by the local Board of Health or Selectmen is a prerequisite to approval by DEQE (DAHM) and DWPC.

(d) Disposal of oily debris on Forest and Park land would require special legislation and Forest and Parts Division approval.

(e) Under Chapter III, section 142B and D, DEQE (DAHM) must approve the use of specific incinerators for the disposal of any material.

Open pit burning of oily debris is not allowed.

II. Policy and Issues

A. Incineration

There are presently no facilities in Massachusetts equipped to burn oily debris. Modifications in existing facilities or the construction of new facilities would be required. There seems to be insufficient motivation for private enterprise to upgrade its incineration facilities. There is also the question as to whether state or federal funding for needed improvements is appropriate in private facilities. Possibly, state-owned facilities should be developed, though this option is not preferred.

Use of portable burners for on-site incineration would be acceptable to DAHM if less than 3,000,000 BTU's per hour are burned or if wind conditions were favorable. However, DWPC, whose approval is also required, fears that in many cases, portable burners might not adequately incinerate oil mixed with seaweed and sand. All open burning would also have to go through local fire department approval.

B. Land Application

DWPC and DAHM have reservations as to the safety of this disposal method, in regard to groundwater contamination. Also at issue is the required extra handling and expense involved in this disposal method; for instance, the need for storage of debris until favorable seasonal conditions.

C. Landfills

DWPC has no designated sites for land disposal of oily debris, aside from sanitary landfills (which must also be approved by DEQE). At present, there are no sanitary landfills approved by DEQE for such disposal due to a combination of unsuitability of sites, lack of liner and leachate collection system, and lack of town request that the landfill be designated to receive oily wastes (since such a request is required under DEQE regulations).

DEQE policy requires segregation of hazardous wastes from household refuse in land disposal. The disposal site must be lined and covered with impervious material following deposition of the hazardous waste. Plans, prepared by an engineer, must be submitted to both DWPC and DEQE prior to the licensing of a site for hazardous waste disposal. Due to this catch-22 situation, cleanup contractors have been taking oily debris out of state for disposal in Rhode Island or New Hampshire. This policy will soon be illegal under federal law.

Thus, there are severe problems in Massachusetts associated with the location and use of permanent disposal sites. Firstly, there is a conflict involved in the coordination of DAHM and DWPC approvals. Secondly, there is a problem in coordination between the state and local governments over the use of sites. Thirdly, there seems to be a need for funding for towns to upgrade landfills to meet DEQE regulations, or new sites should be located and developed which will be acceptable for oily debris disposal.

III. State Funding and Development of Future Disposal Sites

A. Laws, Regulations and Administration

While DWPC and DAHM share authority for disposal, DEM Bureau of Solid Waste Disposal has the authority and funding to plan and implement disposal facilities and to acquire disposal sites, under M.C.L. Chapter 16 (Solid Waste Disposal Act). Though there is some question as to whether "solid waste" includes oily debris and hazardous wastes, this questions is presently undergoing clarification in the state legislature.

B. Issues

DEM's limitations are that:

(1) while bond issue dollars are available for financing, they must be paid back through user charges;

(2) it has been impossible to get local acceptance of sites designated for hazardous waste disposal; and

(3) although the Bureau of Solid Waste Disposal has the power of eminent domain to site a disposal facility, it is politically difficult to use.

PENDING LEGISLATION

It is Massachusetts' understanding that the federal Resource Conservation and Recovery Act of 1976 is supposed to develop a hazardous waste disposal permit system and standards for disposal sites, which should aid Massachusetts.

TABLE B-5. STATE LAWS, REGULATIONS AND POLICY GOVERNING THE STOCKPILING TRANSPORTATION AND DISPOSAL OF OILY DEBRIS

State: Rhode Island

Contact: John Quinn, Department of Environmental Management, 83 Park Street, Providence, RI 02903, 401-277-2808

POLICY AREA

I. Stockpiling of Oily Debris

II. Transportation of Oily Debris to Disposal Sites

III. Disposal of Oily Debris (Existing and Future Sites)

A. Incineration

B. Land application

C. Landfills

APPLICABLE LAWS, REGULATIONS, POLICY

I. 23-46.2, No regulations yet

II. 23-46.2, No regulations yet

1. Title 23, Chapter 46, Department of Environmental Management set standards for local solid waste facilities.

2. Management Regulations under 23-46 effective 16 March 1975 require DEM approval of any septic waste, sludge chemical waste, hazardous material disposal methods (5.4.5).

3. Licensing regulations effective 11 December 1975 require new facilities to show how special wastes will be disposed and procedures for handling hazardous waste.

4. New regulations not presently in hand.

ADMINISTERING AGENCY

I. Department of Environmental Management

PENDING LEGISLATION

I. None

REMARKS

I. No regulations

December 28, 1977

Mr. Russell Wilder
New England River Basins Commission
53 State Street
Boston, Massachusetts 02109

Dear Mr. Wilder:

Attached is a completed form stating the laws, regulations and policies, which pertain to the transportation and disposal of oily debris. In addition please find a summary of similar information which was presented at the Regional Response Team meeting held at Governor's Island, December 15, 1977.

Financial responsibility for the transportation and disposal of oil debris is that of the spiller. In the event that the person responsible for the spill is unknown, there are limited clean-up contingency funds currently available. Starting April 1, 1978 a 1¢/barrel license fee will be imposed on petroleum products when first transferred in the State. This money will be used to fund clean-up and disposal expenses when the person responsible is unknown or does not act promptly. In all cases the State would seek to determine the person responsible for the spill and recover expenses.

If you have any further questions regarding oil spill debris disposal, please contact me at (518) 457-7360.

Sincerely,

Ronald E. Maylath
Associate Sanitary Engineer

Att.

POLICY

I. Stockpiling of oily debris

II. Transportation of oily debris to disposal sites

APPLICABLE LAWS, REGULATIONS, POLICY

I. No laws or regulations apply specifically. In that stockpiled oily debris may cause or threaten to cause a contravention of standards established for waters in N.Y.S., this activity may be regulated to prevent stockpiles of oily debris from becoming a source of pollution in themselves.

II. All waste haulers in NYS must be registered as provided for in Environmental Conservation Law §27-0301 and N.Y. Code of Rules and Regulations Part 364.

ADMINISTERING AGENCY

NYSDEC

PENDING LEGISLATION

None

REMARKS

Regulations require that a waste hauler indicate the equipment, holding tanks, and vehicles to be used, and the place or places where and the manner in which the hauler will finally dispose of waste products into the waters or land areas (public and private) of the State. (Each use of the site will require specific prior approval by NYSDEC). Annual summary reports are required that indicate the number and type of installations emptied or cleaned, the volume and nature of waste products disposed of, and the place and manner in which such waste was disposed.

POLICY

I. Disposal of Oily Debris

APPLICABLE LAWS, REGULATIONS, POLICY

I. ECL §27-0301 NYCRR Parts 360 and 364 Chapter 1810 NYSDEC Policies and Procedures Manual

ADMINISTERING AGENCY

NYSDEC

PENDING LEGISLATION

None

REMARKS

NYSDEC regulations state that no liquid oil or oil/water mix may be deposited at any landfill in New York State. Any oil used for road oiling and/or dust control must be shown to contain less than 5 p.p.m. of PCB's. It is policy that use of sorbents is limited to final clean up in order to avoid the production of large quantities of oil-soaked debris.

Whenever possible, recovered oil or oil/water mix will be processed for recycling. A second best alternative would be to process for incineration.

Whenever possible, recovered oil soaked debris will be: (in order of preference)

1. recycled
2. incinerated at municipal or industrial facility
3. natural degradation by proper land application
4. landburial in a secure land burial site. See NYSEC Part 260.
5. sanitary landfill

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Rocco D. Ricci, Commissioner
P.O. Box 1390
Trenton, N.J. 08625
609-292-2885

RULES CONCERNING DISCHARGES OF
PETROLEUM AND OTHER HAZARDOUS SUBSTANCES

Docket No. DEP 004-77-01

I, Rocco D. Ricci, Commissioner of the Department of Environmental Protection, propose to adopt comprehensive rules to implement the Spill Compensation and Control Act, P.L. 1976, c.141. This document is known within the Department as DEP 004-77-01.

Regulations were first proposed on February 10, 1977 at 9 N.J.R. 68(c). After a series of public meetings, it became apparent that further work would have to be done in order to assure that the Act was implemented in an efficient and equitable manner. Accordingly, I adopted interim rules and directed Steven J. Picco of my staff to form a task force comprised of industrial, business and environmental representatives to develop a new proposal. The task force has completed its work. I congratulate those involved for their contribution of time and effort in this important undertaking.

The task force recommendation, which I propose to adopt, is a highly technical document establishing standards for discharge notification, response, cleanup and prevention. Persons wishing to obtain a copy of the proposal may do so by writing:

Steven J. Picco, Chief
Office of Regulatory and Governmental Affairs
Department of Environmental Protection
P.O. Box 1390
Trenton, New Jersey 08625

Because of the importance of this proposal, a public hearing will be held on February 1, 1978 at 10 a.m. in the Auditorium of the State Museum, 205 West State Street, Trenton, New Jersey.

Persons wishing to submit comments may do so in writing on or before February 15, 1978 to Mr. Picco at the above address. The Department may thereafter adopt this proposal substantially as proposed.

DATE December 16, 1977

Rocco D. Ricci, P.E.
Commissioner

CHAPTER 1E

DISCHARGES OF PETROLEUM AND OTHER HAZARDOUS SUBSTANCES

SUBCHAPTER 1. GENERAL PROVISIONS

7:1E-1.1 Authority

These regulations are promulgated pursuant to N.J.S.A. 58:10-23.11 (P.L. 1976, c. 141), and N.J.S.A. 13:1D-1 et seq.

7:13-1.2 Scope

These regulations cover every discharge of petroleum and other hazardous substances excepting those pursuant to and in compliance with the conditions of a valid Federal or State permit. The notification procedure at N.J.A.C. 7:1E-2.1 applies to the discharge of any hazardous substance in quentities or concentrations which will or may result in damage to lands, waters or natural resources within the jurisdiction of the State. These regulations set forth guidelines and procedures to be followed by all persons in the event of a discharge of petroleum or other hazardous substance. They also set forth certain reporting, design and maintenance requirements for major facilities which handle petroleum or other hazardous substances. For other regulations under N.J.S.A. 58:10-23.11 (P.L. 1976, c. 141), see Title 18 of the New Jersey Administrative Code (Department of the Treasury - Taxation).

7:1E-1.3 Definitions

The following words and terms, when used in this Chapter, shall have the following meanings unless the context clearly indicates otherwise.

(a) "Cleanup and Removal Activities" means actions to remove a discharge of a hazardous substance or the source thereof or to chemically neutralize the substance, or to prevent or mitigate any harmful effects the substance may have upon waters, lands, natural resources or upon public health, safety or welfare.

(b) "Cleanup and Removal Costs" means all costs associated with a discharge incurred by the State, its political subdivisions or their agents or any person with written approval of the Department, in the 1) removal or attempted removal of hazardous substances or 2) taking of reasonable measures to prevent or mitigate damages to the public health, safety, or welfare, including, but not limited to, public and private property, shorelines, beaches, surface waters, water columns and bottom sediments, solid and other affected property, including wildlife and other natural resources.

(c) "Commissioner" means the Commissioner of Environmental Protection.

(d) "Containment" or "Containment Activities" mean actions to limit or prevent the spread of a discharged hazardous substance.

(e) "Department" means the Department of Environmental Protection.

(f) "Discharge" means any intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of hazardous substance into the waters of the State or onto lands from which it might flow or drain into said water, or into waters outside the jurisdiction of the State when damage may result to the lands, waters or natural resources within the jurisdiction of the State, excepting discharges pursuant to and in compliance with the conditions of a valid Federal or State permit.

(g) "Discharge Cleanup Organization" means an organization or association that engages in or intends to engage in cleanup and removal activities.

(h) "Division" means the Division of Water Resources in the Department, P.O. 2809, Trenton, New Jersey 08625.

(i) "Facility" means any place or equipment that is used to refine, produce, store, hold, handle, transfer, process or transport hazardous substances.

(j) "Hazardous Substances" include:

A. Petroleum and petroleum products

B. All pesticides designated as "prohibited", "restricted" or "specially restricted" pursuant to New Jersey Pesticide Control Act of 1971 (N.J.S.A. 13:1F-1 et seq.) at N.J.A.C. 7:30-1.5 thru 1.7 (Appendix A).

C. Substances identified as hazardous by the Federal Environmental Protection Agency at 40 FR 59961, December 30, 1975 proposed pursuant to Section 311 (b) (2) (A) of the Federal Water Pollution Control Act Amendments of 1972, 33 USC 1251 et seq. (Apendix B).

(k) "Major Facility" means any facility having total combined aboveground and buried storage capacity of 400,000 gallons or more, or an appropriate equivalent measure as set by the Director of the Division of Taxation in the Department of the Treasury for hazardous substances which are other than fluid or which are not commonly measured by the barrel. A vessel shall be considered a major facility only when hazardous substances are transferred between vessels. For the purposes of this definition, "storage capacity" shall mean only that capacity which is dedicated to, used for, or intended to be used for storage of the hazardous substances listed in N.J.A.C. 7:1E-1.3(j).

(l) "Natural Resources" means all land, fish, shellfish, wildlife, biota, air, waters and other such resources owned, manage, held in trust or otherwise controlled by the State.

(m) "Owner or Operator" means with respect to a vessel, any person owning, operating or chartering by demise such vessel; with respect to any other facility, any person owning such facility, or operating it by lease, contract or other form of agreement; with respect to abandoned or derelict facilities, the person who owned or operated such facility immediately prior to such abandonment, or the owner at the time of discharge.

(n) "Person" means public or private corporations, companies, associations, societies, firms, partnerships, joint stock companies, individuals, the United States government, the State of New Jersey and any of its political subdivisions or agents.

(o) "Person in Charge of a Facility" means any person who has operating responsibility for a facility from which a discharge occurs at the time of the discharge.

(p) "Person Responsible for Causing a Discharge" means a person whose action or omission results in the discharge of a hazardous substance.

(q) "Petroleum" or "Petroleum Products" means oil or petroleum of any kind and in any form including, but not limited to, oil, petroleum, gasoline, kerosene, fuel oil, oil sludge, oil refuse, oil mixed with other wastes and crude oils.

(r) "Sewage" means domestic sewage including the contents and effluents of septic tanks, public sewer systems and public sewage treatment plants.

(s) "Sewage Sludge" means the dried or semi-liquid residue of a sewage treatment process.

(t) "Spill" or "Spillage" means any escape of hazardous substances from the ordinary containers employed in the normal course of storage, transfer, processing or use. A "spill" becomes a "discharge" only when hazardous substances reach waters of the State or lands from which they might flow or drain into said waters. See 7:1E-1.3(f).

(u) "Transmission Pipeline" means a pipeline which is a major facility and through which petroleum products or other hazardous substances are transported, together with the appurtenances associated with the functioning of the pipeline.

(v) "Vessel" means every description of watercraft or other contrivance that is practically capable of being used as a means of commercial transportation of hazardous substances upon the waters, whether or not self-propelled.

(w) "Waters" means the ocean and its estuaries to the seaward limit of the State's jurisdiction, all springs, streams and bodies of surface or groundwater, whether natural or artificial, within the boundaries of this State.

7:1E-1.4 Access

The owner or operator of a facility shall provide access to the facility to the Department during normal working hours and at any time when a discharge has occurred or appears imminent. The Department may take samples, photographs and statements of fact, and may make a general inspection to determine if the facility is in compliance with these regulations.

7:1E-1.5 Liberal Construction

These regulations, being necessary to promote the public health and welfare, shall be liberally construed in order to permit the Commissioner and the Department to effectuate the purpose of the law.

7:1E-1.6 Waiver

The Department, when it determines that the application of these rules would impair expeditious containment or cleanup and removal of discharges or endanger life, health or safety, may waive any provision of these rules.

7:1E-1.7 Relationship to Federal and State Law

These regulations are not intended to and do not relieve any person of the duty to comply with all other valid governmental regulations governing activities regulated hereunder, including regulations of the Department of Environmental Protection, Department of the Treasury and other appropriate State, Federal and local agencies.

7:1E-1.8 Severability

If any section, subsection, provision, clause, or portion of these regulations is adjudged invalid or unconstitutional by a court of competent jurisdiction, the remainder of these regulations shall not be affected thereby.

7:1E-2.1 Notification of Discharges

(a) As used in this subchapter, "reportable discharge" means any discharge of any hazardous substance which is in such quantity or concentration as may be harmful or which poses a forseeable risk of harm to public health or welfare, or to natural resources.

(b) The owner or operator or person in charge of any facility from which a reportable discharge occurs, or any other person responsible

for causing a reportable discharge, shall immediately notify the Department at telephone number (609) 292-5560 during business hours or (609) 272-7172 at all other times. If a call to the first number is not answered, then the second number shall be called.

(c) A person who notifies the Department pursuant to paragraph (a) shall report the type of substance and the estimated quantity discharged, if known; the location of the discharge; actions the person reporting the discharge proposes to take to contain, clean up and remove the substance, if any, and any other information concerning the discharge which the Department may request at the time of notification.

(d) A copy of these notification requirements, printed in a conspicuous format, shall be displayed in a prominent place on the bridge or pilot house of any vessel which is ordinarily docked in this State, and at any transfer area of an onshore or offshore facility.

7:1E-2.2 Confirmation of Notification: Report

(a) The owner or operator of a facility from which a discharge of a hazardous substance has occurred shall send to the Division written confirmation of the notification of discharge within 60 days after giving notice to the Department as described above. Confirmation shall include a description of the discharge incident, including the source of the discharge, if known; a description of the measures taken to clean up and remove the discharge and any steps planned or already taken to prevent a recurrence of the discharge incident.

(b) In the case of a major facility, a submission pursuant to N.J. A.C. 7:1E-4.24 will be deemed to fulfill the requirements of this section.

(c) Confirmation letters shall be sent to:

Department of Environmental Protection
Division of water Resources
P.O. Box 2809
Trenton, New Jersey 08625
ATTENTION: Discharge Confirmation

7:1E-2.3 Discharge Response

(a) Upon learning that a discharge of hazardous substance or any other substance has occurred, the Department shall act to contain, clean up and remove the discharge of any substance which the Department has specifically designated as hazardous in N.J.A.C. 7:1E-1.3(j), unless it determines that such action will be done properly and expeditiously by the owner or operator of the facility or source from which the discharge occurred, or by any other authorized person.

(b) The owner or operator of a facility from which a discharge has occurred, or any person responsible for causing a discharge, shall

attempt to stop the discharge and shall take reasonable containment measures to the extent he is capable of doing so.

(c) The owner or operator of a facility from which a discharge has occurred may take immediate measures to clean up and remove the discharge, except that he may not apply chemicals without the prior approval of the Division or the Federal On-Scene coordinator under the National Contingency Plan pursuant to 40 CRF Part 1510. Application of neutralizing agents, if done in comformity with an approved DCR plan approved by the Division, shall be considered to have the prior approval of the Division. Unauthorized use of chemicals shall be regarded as a prohibited discharge.

(d) The Department in its discretion may observe, supervise or participate in any aspect of containment or cleanup and removal activities. In the exercise of its supervisory power, the Department may order any person to cease operations if it determines that the person is not capable of properly containing, cleaning up or removing a discharge, or if that person fails to conduct cleanup operations in a proper and expeditious manner. All actions of the Department shall, to the greatest extent possible, be consistent with the National Contingency Plan for removal of oil and hazardous substances, 40 CRF Part 1510.

SUBCHAPTER 3. DISCHARGE CLEANUP ORGANIZATIONS

7:1E-3.1 Scope

This subchapter applies to all persons who engage or intend to engage in the cleanup and removal of discharges of hazardous substances, excepting owners or operators of major facilities covered by DCR Plans who intend to clean up only discharges from their own facilities. The coverage of this subchapter includes commercial cleanup contractors, cooperatives and other mutual-assistance association.

7:1E-3.2 Information to be Filed with Division

(a) All persons who intend to engage in the cleanup and removal of discharges of hazardous substances shall submit in writing to the Division the following information:

(1) Name of the organization;

(2) Form of the organization (e.g. corporation, cooperative association, etc.);

(3) Name(s) of executive officer(s):

(4) Mailing address of the organization;

(5) Address, telephone number and name of the manager of each office maintained by the organization;

(6) Name and address of the registered agent of the organization, if applicable;

(7) A list of the containment and removal equipment owned, leased, contracted or otherwise available for immediate response by the organization, including but not limited to, vehicles, vessels, pumps, skimmer, booms, chemicals, sorbents, hand tools and communication devices, and the location(s) of such equipment;

(8) Names of the trained personnel who are available to operate such equipment and a brief description of their qualifications;

(9) Portions of the State where the organization will respond to discharges.

SUBCHAPTER 4. MAJOR FACILITIES: PLANS, REPORTS AND STANDARDS

7:1E-4.1 Scope

This subchapter applies only to "major facilities" as defined in N.J.A.C. 7:1E-1.3(k).

The Division will accept as a DPCC and DCR plan a plan prepared in compliance with 40 CRF 112 where the provision of 40 CRF 112 are designed to accomplish the same purposes as these regulations. Where the State statute imposes additional mandates (i.e. groundwater protection), the degree of performance required to meet those mandates will be determined and will vary based on 1) the existing quality of the groundwater at the facility site and, 2) the actual or intended use of said groundwater.

7:1E-4.2 Definitions

The following words and terms, when used in this Subchapter, shall have the following meanings unless the context clearly indicates otherwise:

(a) "Impermeable Material" or "Impermeable Liner" means a layer of natural and/or man-made material of sufficient thickness, density and composition as to prevent the discharge into underlying groundwater of any hazardous substances (or aqueous solutions thereof) for a period at least as long as the maximum anticipated time during which the hazardous substances will be in contact with the material or liner, as set forth in the DPCC plan.

(b) The words "shall" or "must" denote a mandatory requirement; the word "should" denotes a method or practice which is recommended but not required by the Department.

(c) "Best Practicable Technology" means:

(1) Such technology as will best reduce the likelihood of a discharge from the facility; and which

(2) Has been field-proven at the time of the Department's review, and which

(3) Can be installed at a reasonable cost.

(d) "Secondary Containment and/or Diversion System" means any structures, devices or combinations thereof designed to prevent spills of hazardous substances from becoming discharges.

7:1E-4.3 Information to be Filed with the Division

(a) The owner or operator of a major facility shall submit to the Division the following information in addition to the information required under sections 7:1E-4.4 and 7:1E-4.22:

(1) Name and location of the facility;

(2) Name(s) of the owner or operator of the facility;

(3) Name and address of the owner or operator's registered agent;

(4) Storage and transfer capacity of the facility;

(5) The types of hazardous substances listed in N.J.A.C. 7:1E-1.3(j) which are transferred, refined, processed or stored at the facility, excepting small quantities used for research or educational purposes only;

(6) Average daily throughput of the facility for each hazardous substance;

(7) The source, nature of, and conditions of financial responsibility for a discharge incident, established by any one of, or a combination of the following:

A. Insurance

B. Qualification as a self-insurer

C. Surety bonds payable to the New Jersey Spill Compensation Fund.

(b) The information required under this section and/or any other section of this subchapter may be combined and sent to the Division in a single transmittal. The DPCC and DCR plans required under sections 7:1E-4.4 and 7:1E-4.21 may be prepared and submitted as a single document, which can also include the information required by this section.

(c) The information required under this section shall be filed with the Division immediately by any owner or operator of an existing major facility which has not already done so, or prior to the operation of a new major facility.

(d) Any substantial changes in the information supplied under this section shall be reported to the Division within 30 days.

(e) The information required under this section and any other section of this subchapter shall be sent to:

Department of Environmental Protection
Division of Water Resources
P.O. Box 2809
Trenton, New Jersey 08625
ATTENTION: Spill Prevention

7:1E-4.4 Preparation and Submission of Plans

(a) The owner or operator of a major facility shall prepare a Discharge Prevention, Containment or Countermeasure (DPCC) Plan and a Discharge Cleanup and Removal (DCR) Plan in accordance with Sections 7:1E-4.4 and 7:1E-4.22. The DPCC and DCR Plans may be prepared and submitted to the Division as a single document.

(b) The owner or operator of an existing major facility shall submit a DPCC Plan and a DCR Plan to the Division within one year after the effective date of this section, unless time is extended for good cause shown. Unless time is extended by the Division, such additional information as the Division may require shall be submitted within thirty days of receipt of the Division's request. Implementation of the DPCC and DCR Plans shall begin as soon as possible, but not later than one year after the Division's approval. The owner or operator shall make a good faith effort to submit an acceptable plan to the Division within one year after the effective date of this section. The Division shall act to approve or deny approval of a complete submission of a DPCC and/or DCR Plan within 90 days of receipt.

(c) The owner or operator of a new major facility shall submit a DPCC Plan and a DCR Plan to the Division at least three months prior to the anticipated operational date of the facility, and shall implement the approved plans prior to operating the facility.

(d) Plans requiring construction of engineering works shall be certified to and sealed by a licensed professional engineer pursuant to N.J.S.A. 45:8-27 and 28. The Division shall not require certification to the installation of packaged facilities, discharge containment and cleanup equipment, minor construction or repiping.

(e) If Plans call for facilities, procedures, methods or equipment not yet fully operational, these items shall be listed separately and a schedule for installation and operational status shall be provided.

Approval of the DPCC or DCR Plan may be conditioned on making such items operational on a schedule acceptable to the Division.

(f) The Division shall review DPCC and DCR Plans for conformance with the standards of this Subchapter. The Division shall state in writing its reasons for denying approval of a plan or portion thereof.

(g) If the Division finds a Plan to be incomplete or denies its approval of a Plan, the owner or operator shall have three months within which to submit an acceptable Plan, unless the Division extends the time for good cause shown.

(h) Two copies of a DPCC or DCR Plan shall be submitted to the Division for approval. Copies shall be sent to:

Department of Environmental Protection
Division of Water Resources
P.O. Box 2809
Trenton, New Jersey 08625
ATTENTION: Spill Prevention

(i) The Division may inspect major facilities prior to approving DPCC or DCR Plans and at reasonable times thereafter in order to ascertain compliance with the plans. The Division shall give adequate notice to the owner or operator prior to making any inspection, unless such notice could reasonably be expected to result in concealment of a violation.

7:1E-4.5 Discharge Prevention, Containment and Countermeasure (DPCC) Plans

(a) The DPCC Plan shall be prepared in accordance with good engineering practices and employ the best practicable technology, and shall have the full approval of management at a level with authority to commit the necessary resources.

(b) The DPCC Plan shall contain the following information:

1. Name and location of the facility.

2. Name(s) of the owner or operator of the facility.

3. Name and address of the owner or operator's registered agent.

4. General site plan of the facility, showing the locations of bulk storage tanks (buried and above-ground), drum storage areas, process buildings, regularly used transfer areas, and any other structures in or on which hazardous substances are stored or handled, or which are used for the prevention of discharges of hazardous substances.

5. Drainage plans of the facility, including the location of all

major sewers, storm sewers and all watercourses into which surface water runoff from the facility drains.

6. Anticipated date on which the facility will become operational, if the facility is a new one.

(c) If the facility has experienced two or more reportable discharge events within the previous twelve months, the DPCC Plan shall include a description of each such event, corrective action taken, and plans for preventing recurrences.

(d) The DPCC Plan, in addition to the above requirements, shall contain a brief description of the facility's approach to compliance with the standards of sections 7:1E-4.6 through 7:1E-4.21 of these regulations.

(e) In addition to the general site plan which must be submitted to the Division as part of the DPCC Plan pursuant to paragraph (b) 4, the owner or operator shall maintain at the facility or other location reasonably proximate thereto, detailed plans of the facility, including locations of bulk storage tanks, drum storage areas, pipes, process buildings, transfer areas, secondary containment systems and drainage works. The owner or operator shall afford to the Department access to such plans during normal business hours, upon prior notice, and at any time when a discharge incident or imminent discharge necessitates consulting the plans. The DPCC Plan shall indicate where such plans are kept and the methods whereby the Department may gain access to them during business hours and at all other times in case of an emergency.

7:1E-4.6 Discharge Prevention - Policy

(a) This Subchapter shall be construed in light of the policies expressed in this section.

(b) The purpose of the Department's discharge prevention regulations is to encourage, and in certain respects to require, design and maintenance standards at major facilities that will ensure against discharges of hazardous substances.

(c) New major facilities and new construction at existing major facilities will be required to meet the standards of this Subchapter with the following exceptions and exemptions:

(1) Existing major facilities shall be exempt from such portions of these regulations as particularly specified herein.

(2) The Department shall exempt an existing major facility from any portion of these regulations if the owner or operator demonstrates that meeting a particular requirement would be impracticable or would not substantially contribute to prevention of discharges.

(3) The Department shall upon request grant an existing major facility a reasonable period of time, in light of all circumstances including economic feasibility, to upgrade to meet the standards of these regulations where required to do so.

The Department shall state in writing its reasons for granting or denying any exemption. The Department may require of any major facility which has been exempted from any requirement of these regulations the installation of alternative prevention and/or detection devices such as alarms, so as to minimize the chances of a discharge, and may, in addition, require the owner or operator of such major facility to demonstrate an enhanced ability to prevent expeditiously contain and/or clean up and remove a discharge from the portion of the facility to which an exemption has been granted.

(d) Whenever an existing major facility is exempted from any requirement of these regulations, the facility, so far as is practicable, shall be upgraded over time to meet the standards required of new facilities. The rate of such upgrading shall be proposed by the owner or operator and be subject to review and approval by the Department. The Department shall not require the reconstruction or replacement of any existing structure except as that structure requires substantial reconstructure or replacement in the normal course of use, unless the Department can show that the structure presents an imminent threat of causing a discharge. To the extent that retirement of existing equipment or protions of a mjaor facility can be predicted, the DPCC Plan shall include a schedule for upgrading that equipment or portion of the facility to new facility standards. The Plan shall also include a description of those portions or aspects of the major facility that cannot be practicably upgraded over time, and the reasons therefor.

(e) The Department recognizes that the designs of major facilities differ, and that therefore appropriate methods of discharge prevention are necessarily site-specific. It is the intention of the Department that the owners and operators of major facilities have the greatest possible freedom to design and operate their facilities as they wish, consistent with these regulations. Wherever in these regulations a particular method of discharge prevention is mandated, the owner or operator of a major facility may substitute an alternate method if he can demonstrate to the satisfaction of the Department that such alternate method will provide protection against discharges reasonably equivalent to, or better than, the method it is intended to displace. If the Department requires the installation of alternative prevention and/or detection devices as mentioned in subsection (c), the owner or operator shall propose the devices to be used, subject to the Department's approval.

7:1E-4.7 Facility Drainage and Secondary Containment

(a) To the maximum extent practicable, all portions or areas of a major facility in which hazardous substances are routinely stored, pro-

cessed, or transferred shall be designed so that the largest probable spill will be prevented from flowing, draining or leaching into the waters of the State.

(b) Appropriate secondary containment and/or diversionary structures to prevent spilled hazardous substances from reaching waters of the State may include any of the following or their equivalents:

(1) Dikes, berms or retaining wall sufficiently impervious to contain spilled hazardous substances;

(2) Curbing;

(3) Gutters, Culverts and other drainage systems;

(4) Weirs, booms, and other barriers;

(5) Diversion ponds, lagoons, retention basins, holding tanks, sumps, slop tanks and other collecting systems;

(6) Drip pans;

(7) Other means as approved by the Department.

(c) To be considered adequate, secondary containment and/or diversionary systems, structures or equipment must meet the following standards:

(1) The system must block all probably routes by which spilled hazardous substances could reasonably be expected to flow, migrate or escape into waters of the State, from within the contained area.

(2) The system must have sufficient capacity to contain or divert the largest probable single spill that could occur within the containment area, plus an additional capacity to compensate for any anticipated normal accumulation of rainwater.

(3) In order to prevent the discharge of hazardous substances into groundwater, all components of the system shall be made of or lined with impermeable materials. Such material or liner must be maintained in an impermeable condition.

(4) No process area, transfer area, diked storage area or other storage area, or secondary containment/diversion system appurtenant thereto shall drain into a watercourse, or into a ditch, sewer, pipe or storm drain that leads directly or indirectly into a water course or public sewage treatment plant, unless:

A. provision is made to retain, by valves or other

positive means, any accumulated rainwater until its condition can be ascertained, or

B. provision has been made to intercept any spilled hazardous substances in an approved industrial wastewater treatment or pretreatment facility, or other approved facility.

(5) Catchment basins, lagoons, etc., should not be located in a manner that would subject them to flooding.

(6) Incompatible materials shall not be stored within the same containment area if there is a substantial likelihood of them mixing in the event of spillage. "Imcompatible" materials are those which, if mixed, will create hazards greater than those posed by the individual substances alone, such as fire, explosion, or generation of toxic fumes. This restriction does not apply to process areas where the substances are brought into proximity as part of a production process.

(7) Provision shall be made for removing spilled hazardous substances from a secondary containment or diversion system. The permissible time period for removal depends on the hazard posed by the spill. Secondary containment systems shall not be used as backup product storage systems nor for any other purpose that would impair their capacity to contain spills. The DPCC Plan shall include an estimate of the time required to remove the largest probable spill from any secondary containment system.

7:1E-4.8 Housekeeping, Maintenance, Inspections and Records

(a) Hazardous substances shall be kept in containers suitable for their storage or processing at all times except when being transferred bewteen containers. Containers shall be compatible with the substances stored therein and resistant to chemical attack by the substances. Hazardous substances shall be kept protected from the elements and from spillage.

(b) Tanks, pipes, valves, glands, drums, or other equipment leaking hazardous substance shall be promptly repaired, replaced or taken out of use following detection of a leak.

(c) Spills of hazardous substances that may seep, flow, drain or be washed, blown or carried into waters of the State, including groundwater, shall be promptly cleaned up.

(d) Loose quantities of hazardous substances shall not be allowed to persist on grounds, floors, walls or equipment, or on other places within the facility where they may seep, flow, drain or be washed, blown or carried into waters of the State.

(e) The facility should keep on hand, in convenient locations, adequate quantities of sorbent materials, chemical neutralizing agents and/or other materials as needed, sufficient to contain and clean up such small spills as may be expected to occur in the ordinary operations of the facility.

(f) An adequate supply of protective safety equipment, such as rubberized coveralls, boots, gas masks, etc., shall be maintained at the facility in convenient locations for use by any personnel who are required to clean up spilled hazardous substances. Where such equipment is required by any regulation of the Occupational Safety and Health Administration (OSHA), compliance with such regulation shall be deemed to fulfill the requirements of this subsection.

(g) Secondary containment systems shall be maintained in good repair, free of cracks through which hazardous substances could escape. Such systems shall be inspected at regular intervals, at least once a year.

(h) Flexible hoselines which are used to transfer hazardous substances shall be visually inspected prior to each use. Visibly damaged, deteriorated, or discarded hoses shall be immediately taken out of service and removed from the work area.

(i) The owner or operator of a major facility shall carry out a regular program of inspections designed to detect spills and potential equipment failures. Such a program shall include all tests specifically required by any applicable section of the subchapter. The DPCC Plan shall include a detailed description of the inspection program. Records of inspectiions and tests which are made under the inspection program, shall be maintained by the owner or operator for a period of three years and shall be available to the Department for inspection during business hours.

7:1E-4.9 Detection of Discharges to Ground Water

(a) Unless a leak is likely to be detected by personnel, product gauging or an automatic leak detection system, the owner or operator of a major facility shall install observation wells reaching the water table in proximity to any potential source of a discharge into ground water, in locations estimated to give the best probability of detecting leaks from the source.

(b) If a major facility is required to install observation wells pursuant to subsection (a), the Department shall require at least one observation well be installed but not more than the lesser of --

(1) one well per acre, or

(2) one well per each individual potential source.

(c) The owner or operator of a major facility shall submit as part of

the DPCC Plan a plan showing the proposed locations of observation wells and ground water leak detection systems where such installations are required. The Department shall review this proposal and may require the installations be in different locations.

(d) The owner or operator shall sample observation wells and analyze the samples at least once quarterly for parameters acceptable to the Department which will indicate the probably presence in ground water of the hazardous substance(s) stored in or conveyed through the potential source. Records of these samples must be maintained by the owner or operator for a period of 3 years, and shall be available for inspection by the Department during regular business hours.

(e) If sampling indicates the probably presence in ground water of a hazardous substance discharged after installation of the wells, the owner or operator shall immediately report the fact to the Division. The Division may thereafter require additional sampling and analyses to determine the particular hazardous substance and whether it was discharged from the major facility.

(f) Upon first installing observation wells where required, the owner or operator shall obtain samples and analyses thereof to establish baseline levels for the hazardous substance(s) which the well is intended to detect. Results of these analyses shall be submitted to the Division along with location maps and boring logs.

(g) The owner or operator of a major facility shall afford to the Department access to ground water observation wells for the purpose of taking samples therefrom during regular business hours, and at other times upon adequate notice or immediately in an emergency situation.

7:1E-4.10 Flood Hazard Areas

(a) Hazardous substances stored within the 100-year flood plain of any watercourse as delineated by the Department shall be protected against being carried off by or being discharged into flood waters.

(b) Hazardous substances stored within any area known by the owner or operator to be subject to a high probability of flooding shall be likewise protected.

(c) The DPCC Plan shall describe how such protection is to be achieved.

7:1E-4.11 Security

(a) All major facilities should be adequately fenced (fully fenced on land) with entrance gates locked and/or guarded when the facility is unattended, and either guarded or under observation by personnel at all other times.

(b) Valves which will permit escape of a tank's or other container's contents to the surface should be securely locked in the closed position when in non-operating or non-standby status.

(c) Starter controls on all pumps should be locked in the "off" position when the pumps are in non-operating or non-standby status unless the controls are located at a site accessible only to authorized personnel, which site is itself attended or locked.

(d) The manifolds of all pipes should be securely capped or securely blank-flanged when not in service or standby service for an extended time.

(e) Major facilities should be adequately illuminated in operating areas so that personnel on the premises can detect intruders or spills during hours of darkness.

(f) If the major facility is not adequately fenced and secured as described in paragraph (a) of this section, the requirements of paragraphs (b), (c) and (d) shall be considered mandatory.

7:1E-4.12 Personnel Training

(a) Owners or operators shall implement an appropriate program for training their personnel involved in the handling of hazardous substances, in the proper techniques for handling the substances stored, processed, or transferred in the facility; in the operation and maintenance of equipment to prevent spills and discharges, and in the procedures to be followed in the event of a spill or discharge.

(b) Each major facility shall have a designated person with authority to act who is responsible for discharge prevention.

(c) Briefings, training sessions, courses and other educational efforts shall be conducted often enough to ensure that every employee involved in hazardous substance operations is given an adequate understanding of the discharge prevention plan for the facility and the procedures to be followed in the event of a spill or discharge, including the procedures for notifying line management and the Department. At a minimum, every employee involved in hazardous substance operations shall be given such instruction at the commencement of employment in the facility.

7:1E-4.13 Containment Equipment

If a major facility handles oil or other non-miscible lighter-than-water hazardous substances, and the facility is adjacent to, or sufficiently near a body of surface water such that a spill from the facility would be reasonably expected to reach the water, the facility shall maintain or have available from a nearby stockpile an adequate length of flotation boom and/or filter fences and/or sorbent materials sufficient to contain and prevent the further

spread of discharges.

7:1E-4.14 Petroleum and Hazardous Substance Bulk Storage Tanks

(a) Above-Ground Tanks

(1) Above-ground bulk storage tank installations shall be provided with an adequate means of secondary containment, designed and built in accordance with good engineering practice, capable of effectively holding the entire contents of the largest single tank contained, and having sufficient additional capacity to accommodate accumulated precipitation and to provide a reasonable margin of safety in the event of a tank failure.

(2) The secondary containment system shall conform to the standards set forth in N.J.A.C. 7:1E-4.7, and of 40 CFR 112 where applicable.

(3) The area beneath bulk storage tanks shall be made of or surfaced with a material sufficiently impermeable to passage and/or chemical attack by the stored substances as to prevent passage into ground water by the substances under the conditions of storage prevailing within the tank. Existing bulk storage tanks shall be exempted from this requirement until such time as they may require substantial reconstruction or replacement in the normal course of use.

(4) Pipes leading to and from above-ground tanks, which enter the tank below the liquid level, shall be equipped with valves sufficiently close to the tank that they can prevent the contents of the tank from escaping outside the secondary containment area in the event of a pipe rupture outside the containment area.

(5) Above-ground tanks shall be subjected to periodic integrity testing on a schedule which shall take into account the material of which the tank is constructed, the substances stored therein, soil conditions and other circumstances which affect tank life and the probability of leakage. Testing techniques shall take into account tank design. Acceptable methods include hydrostatic or other liquid-pressure testing, visual inspection or a system of non-destructive shell thickness testing. Where the last system is used, comparison records of shell thickness reduction shall be maintained throughout the life of the tank. Tank supports and foundations shall be inspected as well.

(b) Buried Bulk Storage Tanks

(1) Owners and operators of existing buried bulk storage tanks should consider installing the protection required of new

facilities in order to minimize the likelihood of leaks or the consequences thereof.

(2) New buried bulk storage tanks shall be made of corrosion-resistant materials, or shall be protected from corrosion by coatings, cathodic protection or other effective methods compatible with local soil conditions.

(3) New buried bulk storage tanks shall be protected by product-sensitive detection devices implanted in the ground beneath and around the buried tanks, where such devices are available and their use is practicable.

(4) Existing buried bulk storage tanks, or new ones that cannot be protected by the means described above or by means affording equal or better protection, shall be provided with the best practicable means of leak detection, such as:

A. Careful gauging and recording of contents of buried tanks;

B. Flow detectors that will give alarm if level in tank is dropping when product is not being drawn off deliberately.

C. Observation wells.

(5) Buried bulk storage tanks shall be subjected to periodic integrity testing in a manner and on a schedule as specified in the DPCC plan. Hydrostatic or product pressure testing (i.e. Kent-Moore type test) or an alternative method acceptable to the Division which reflects best practicable technology standards, shall be employed.

(c) Partially-Buried Metallic Tanks

New construction of partially buried metallic tanks is prohibited unless the owner or operator can demonstrate to the Department a need for such construction. If such a tank is built, the buried section shall be adequately coated and protected with cathodic protection and other safeguards specified by the Division.

(d) If a tank is served by internal heating coils, such coils, the pipes leading to and from them, and the facilities to which they connect, must be designed so that any leakage passing from the tank into the heating coil system will be captured and contained in a settling tank, skimmer or other secondary containment or wastewater treatment system.

(e) Tank installations should be equipped with fail-safe devices capable of detecting overfills and other types of spills, which devices can actuate valves or other shutdown mechanisms, or which can

summon human aid. Such devices include:

(1) high liquid level alarms with an audible or visual signal designed to alert plant personnel of overfills;

(2) high liquid level pump cutoff devices designed to stop flow at predetermined levels;

(3) direct communication between tank gauger and pumping station;

(4) fast response systems for determing liquid levels, such as visible gauges, digital computer links, etc.;

(5) interconnections between tanks so that overfills are directed into other tanks.

Use of devices such as the foregoing shall be at the owner or operator's option for tanks which are served by adequate secondary containment systems. For tanks which are not so served, the owner or operator shall specify in the DPCC Plan which fail-safe devices he proposes to employ in order to provide the maximum practicable degree of spill detection and prevention. The Department may approve alternative devices.

(f) Mobile or portable storage tanks shall be positioned or located so as to prevent spills therefrom from reaching surface waters. If such tanks are used for long term storage, they shall be protected by adequate secondary containment of sufficient capacity to contain or divert the contents of the largest single compartment or tank. Such tanks shall not be located in areas subject to periodic flooding or washout.

(g) Existing bulk storage tanks are hereby exempted from any requirement of 7:1E-4.14 compliance with which would necessitate substantial reconstruction or replacement of the tank. When substantial reconstruction or replacement of a tank, including relining, must be undertaken as the result of deterioration of the tank, or in the course of normal plant capital improvements, the tank installation shall be upgraded to comply with all requirements of this section.

7:1E-4.15 Tank Car and Tank Truck Loading/Unloading Areas

(a) All tank car and tank truck loading areas shall be designed such that a spill of the largest single compartment of any tank car or tank truck in the area will be prevented from entering any surface water body, sanitary sewer or storm drain, other than a drain which leads to an approved industrial wastewater treatment plant or other facility which will effectively contain the spilled hazardous substance.

(b) All tank car and tank truck loading areas employed in the trans-

fer of hazardous substances should be equipped in the area of transfer with a secondary containment system of sufficient capacity to contain or divert the volume of the largest single compartment of any tank car or tank truck loaded or unloaded in the area. Such a secondary containment system may include any or all of the following or any other device or method suitable for the purpose:

(1) containment curbing,

(2) trenching system and catchment basin,

(3) drainage to separator or approved industrial wastewater treatment facility.

(c) All tank car and tank truck loading/unloading areas should be paved or surfaced in the area of transfer with impermeable materials.

(d) Prior to filling or departure of any tank car or tank truck, the lowermost drain and all outlets of such vehicles shall be closely examined for leakage and if necessary tightened, adjusted, repaired, or replaced so as to prevent liquid leakage in transit. All manifolds on tank cars or tank trucks shall be flanged or capped, and valves secured, prior to leaving transfer areas.

(e) An interlocked warning light or physical barrier system should be provided in transfer areas to prevent vehicle departure before complete disconnect of flexible or fixed transfer lines.

(f) Tank cars or tank trucks in the process of being loaded or unloaded should be attended at all times during the procedure.

7:1E-4.16 Drum Storage For Hazardous Substances

Drum storage areas, including docks where drums are stored, shall be served by adequate secondary containment systems.

7:1E-4.17 Process Areas For Hazardous Substances

(a) Drainage from production facilities, including buildings, and other process areas shall be so engineered as to provide a means of secondary containment for spilled hazardous substances.

(b) Process wastewater and cooling water pipes, plant drains and similar installations which drain into sewers, storm drains, public wastewater treatment plants, watercourses or other routes which drain to waters of the State shall be engineered so that probable spills of hazardous substances will not escape through them to waters of the State. If hazardous substances captured in secondary containment systems will drain into process wastewater lines, provision must be made to treat or remove the hazardous substances before the water is discharged.

7:1E-4.18 In-Facility Pipes for Hazardous Substances

(a) Where practicable, each in-facility pipe should be marked by lettering, color banding or color coding to indicate the product transferred through it.

(b) Because of the potential for undetected spills, pipes should not be buried unless necessary. Wherever practicable exposed pipe corridors or galleries should be employed in preference to burial.

(c) New buried piping installations shall be protectively wrapped and coated or cathodically protected if soil conditions warrant and the pipe is of corrodable material.

(d) Buried pipes shall be equipped with product-sensitive leak detection devices, if such devices represent best practicable technology.

(e) If a section of buried pipe is exposed for any reason, it shall be carefully examined for deterioration, and if found to be deteriorated, shall be repaired or replaced. Existing pipes which require repair or replacement shall be upgraded to the standards applicable to new installations.

(f) Pipes removed from service for extended periods of time shall be capped or blank-flanged and marked as to origin.

(g) Pipe supports should be designed so as to minimize abrasion and corrosion and allow for expansion and contraction. Wood-to-metal contacts should be avoided.

(h) If in-facility pipes are elevated across roadways, gate check-in procedures, warning signs and/or other means shall be used to minimize the chance of a vehicular collision with the pipes.

7:1E-4.19 Transmission Pipelines

(a) Transmission pipelines shall conform to all applicable regulations of the U.S. Department of Transportation, in particular, 49 CFR Part 195, "Transportation of Liquids by Pipeline".

(b) Pipelines shall be equipped with sensing devices which will automatically shut off flow if a leak is detected.

(c) New buried pipelines shall be protectively wrapped and coated and/or cathodically protected if soil conditions warrant and the pipeline is of corrodable material.

(d) If a section of buried pipeline is exposed for any reason, it shall be carefully examined for deterioration, and if found to be deteriorated, shall be repaired or replaced. Existing pipelines which require repair or replacement shall be upgraded to the standards

applicable to new buried pipelines.

(e) Shutoff valves capable of activation by remote control from the pipelines's operating control center shall be installed on each side of any reservoir holding water for human consumption which the pipeline crosses or is sufficiently near that a rupture of the pipeline would result in a discharge to the reservoir.

(f) In addition to the other requirements of this subchapter, the owner or operator of a transmission pipeline shall file with the Division a map of the transmission pipeline in New Jersey. The map shall be filed along with the DPCC Plan unless the map has been previously submitted to the Division. The map shall include the following information:

(1) Size of pipe

(2) Age of pipeline sections

(3) Locations of valves

(4) Locations of breakout tankage

(5) Locations of pumps

(6) Stream crossings (not including intermittent streams)

(7) Indication of operating pressure

(8) Location of flow recording devices

(9) Maximum design pressure

(10) Major road crossings

(11) Periods of use (if continuous so indicate)

(12) Products to be carried through the pipeline

(13) Scale

(14) Date of map

7:1E-4.20 Marine Transfer Facilities

(a) All regulations of the U.S. Coast Guard which apply to oil transfet facilities (in particular, 33 CFR 154 and 33 CRF Part 156) are herein expressly adopted by reference, and are further made applicable as well to all marine transfer facilities which transfer in the liquid state any hazardous substances other than oil.

(b) If oil and other non-miscible lighter-than-water hazardous sub-

stances are transferred at the facility, there shall be kept available for immediate deployment in the event of a discharge, a length of floatation boom sufficient to contain probable discharges of hazardous substances, based on the rate at which substances are transferred and the volume of substances which are likely to be discharged before boom can be positioned.

(c) Transfer operations should not be commenced, or if commenced should be discontinued, under the following conditions:

(1) If weather forecasts predict for the vicinity of the facility that winds will reach gale force, or that heavy rain, sleet, snow or other storm conditions will substantially reduce visibility or otherwise increase the risk of discharges, or if such severe weather conditions occur after transfer operations have been commenced.

(2) If fire occurs in the vicinity of the transfer operation or a nearby portion of the transfer facility.

(3) If at any time the transfer system is functioning contrary to the intended operating procedures of the facility.

(4) If a break occurs in the transfer system.

(5) If there is an apparent discrepancy in the quantity of hazardous substance transferred.

(6) If the communication system is not operative.

(7) If hazardous substances are observed in the water near any transfer component.

(8) If a reportable discharge of hazardous substance occurs during transfer. Transfer should not be resumed until after the discharge has been reported to the Department and the Department is satisfied that the adequate steps have been taken to contain the discharge and to prevent further discharges.

7:1E-4.21 Discharge Cleanup and Removal Plan

(a) The owner or operator of a major facility shall prepare and implement a Discharge Cleanup and Removal (DCR) Plan containing the following information:

(1) A list of containment and removal equipment to which the facility has access through ownership, contract or other means, including but not limited to vehicles, vessels, pumps, skimmers, booms, chemicals, and communications devices. If access to equipment is by contract with or membership in a discharge cleanup organization which had filed information

with the Division pursuant to N.J.A.C. 7:1E-3.1, it is sufficient to supply the name of the organization in lieu of an equipment list;

(2) List of the trained personnel who are available to operate such equipment and a brief description of their qualifications;

(3) The terms of agreement and operation plan of any discharge cleanup organization of which the owner or operator of the facility is a member;

(4) Procedures for notifying management, government agencies and cleanup personnel or contractors in the event of a discharge;

(5) Procedures for mobilizing equipment and personnel for initiating containment and cleanup, and an estimate of the maximum response time required to initiate containment and/or cleanup of discharge of varying size up to the largest probable discharge that could occur at the facility;

(6) Description of a training program for those personnel assigned to any aspect of discharge response;

(7) Names, titles and 24-hour telephone numbers of persons authorized to hire contractors and release funds for discharge response, containment, cleanup and removal.

(8) Proposed methods of disposal and disposal sites for hazardous substances or contaminated soil, debris, etc., gathered during cleanup and removal operations.

(b) Each major facility shall have available to it, by ownership or by arrangement with a discharge cleanup organization which has submitted to the Department the information requied by N.J.A.C. 7:1E-3.2, adequate equipment and personnel to clean up the largest probable discharge that could occur at the facility.

7:1E-4.22 Amendment of Plans by Owners or Operators

(a) The owner or operator of a major facility having an approved DPCC or DCR Plan shall report to the Division any change in facility design, construction, operation or maintenance which will materially affect the facility's potential for discharges of hazardous substances or the substance of existing plans. The owner or operator shall amend the DPCC and/or DCR Plan to reflect such changes, and shall submit such amendments to the Division for approval.

(b) The Division shall act on proposed amendments within 30 days. If the Division fails to approve or reject the proposed amendment within that time, it shall be deemed approved.

(c) Amendments to DPCC or DCR Plans shall be implemented as soon as possible, according to a schedule submitted by the owner or operator and approved by the Division.

(d) Notwithstanding compliance with paragraph (a) of this section, the owner or operator shall complete a review and evaluation of the DPCC and DCR Plans at least once every three years. As a result of this review and evaluation, the owner operator shall amend the Plans within six months of the review to include more effective prevention and control technology if:

(1) Such technology will significantly reduce the likelihood of a discharge from the facility;

(2) Such technology has been field-proven at the time of the review, and

(3) The technology can be installed at a reasonable cost.

The review and evaluation required by this paragraph can be conducted concurrently with the review required by 40 CRF 112.5.

7:1E-4.23 Amendment of Plans Following Discharge

(a) Within 60 days after any reportable discharge at a major facility, the owner or operator thereof shall submit to the Division the following information:

(1) A full report of the discharge incident, including the cause(s) of the discharge and a failure analysis;

(2) The corrective actions and/or countermeasures taken, including a description of equipment repairs and/or replacements;

(3) Additional preventive measures taken or proposed to minimize the possibility of recurrence;

(4) Such other information as the Division may reasonably require pertinent to discharge event or the DPCC or DCR Plan.

(5) A copy of the draft of any DPCC or DCR Plan, if the Plans have not previously been submitted to the Division.

(b) A copy of the information required to be sent to the Regional Administrator, U.S. Environmental Protection Agency, pursuant to 40 CFR 112.4 shall be deemed to satisfy the requirements of paragraph (a) of this section.

(c) Following submission of the information required by paragraph (a) of this section, the Division may review the major facility's DPCC

and DCR Plans and may require the owner or operator of the facility to amend the Plans if it finds that a Plan does not meet the requirements of this subchapter or that amendment of the Plan is necessary to prevent and contain similar discharges from the facility.

(d) If the facility is one to which the requirements of 40 CFR 112.4 are applicable, the Division shall make recommendations to the Regional Administrator and shall stay any direct action to demand amendment of Plans until after the Regional Administrator has had reasonable time to act, or to decline to act, under 40 CRF 112.4 (d). If the Regional Administrator, pursuant to the Division's recommendations, proposes to require an amendment to the facility's SPCC Plan, the Division shall further stay any direct action pending the conclusion of the procedures provided for in 40 CFR 112.4(e) and (f). Thereafter the Division may act to require the owner or operator of the major facility to amend DPCC or DCR Plans in any manner allowed under these regulations and not inconsistent with any requirements imposed by the Regional Administrator.

(e) Amendments required by the Division shall become part of the DPCC or DCR Plan within 30 days after approval by the Division, unless the Division shall specify another effective date. The owner or operator shall implement the amendment of the plan as soon as possible, according to a schedule approved by the Division.

7:1E-4.24 Denial or Revocation of Approval of DPCC or DCR Plans or Amendments; Appeals

(a) The Division shall state in writing its reasons for denying or revoking approval of any DPCC or DCR Plans or amendments thereto.

(b) The Division may revoke its approval of a DPCC or DCR Plan if the owner or operator fails to comply with an approved schedule for bringing his Plan into compliance with the requirements of these regulations, or fails to fulfill any condition of an approval, or submits to the Division false or willfully misleading information.

(c) The owner or operator of a major facility who is aggrieved by any decision of the Division to deny or revoke approval of a DPCC or DCR Plan or any amendment thereto has a right to a hearing before the Department.

(d) Any person so aggrieved may request a hearing by sending a written request to:

Office of Regulatory Affairs
New Jersey Department of Environmental Protection
Divison of Water Resources
P.O. Box 2809
Trenton, New Jersey 08625

within 15 days of receipt of the Division's decision. Hearing requests

shall be made in the form specified in N.J.A.C. 7:8-6.4.

(e) Hearings shall be conducted in accordance with the procedures for contested case hearings under the New Jersey Adminstrative Procedure Act, N.J.S.A. 52:14B-1 et seq., and the regulations of the Division thereunder, N.J.A.C. 7:8-6.1 et seq. The Division shall suspend its action pending the outcome of the hearing.

APPENDIX C

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OIL SPILL DEBRIS DISPOSAL WORKSHOP

22 February 1978
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16. ABSTRACT

This report is a digest of a workshop on disposal of oil spill debris. Representatives of five New England states and New York agreed that oil spill cleanup and disposal of debris is a major regional problem which must be addressed by identifying disposal sites in advance of major oil spills. The workshop provided a forum for discussion of state oil spill clean up and disposal and EPA's policies and plans for regulating clean up operations. A representative from each of the six states reviewed existing laws and regulations governing oil-debris stockpiling, transportation to disposal sites, and the relation between state and local ordinances on liability for disposal costs. Ultimate responsibility for oily debris transportation and disposal varies from state-to-state, and this in turn affects approaches to identifying acceptable disposal sites.

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